CITY OF BOSTON DENTAL HEALTH SURVEY - 1979

FINAL REPORT

[Massachusetts Department of Public Health]

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I. Introduction

It is appropriate at periodic intervals to take stock of our progress in preventing dental disease, particularly in its most ubiquitous manifestation, dental caries. Because dental caries is the most common of the oral diseases, and because most individuals have their first experience with this disease in childhood, it is important to understand the patterns of tooth decay in the early years of life. These patterns can be delineated by studying the epidemiology of dental caries (the frequency and distribution of the disease). With the epidemiologic approach, one observes the disease in larger groups of people; particular attention can then be focused on those who are most or least affected, in the hope of finding a common denominator for each group. Even where this technique does not result in the prevention and control of the disease, it provides information for a more intelligent approach to the problem by everyone from the individual practitioner to the policy maker.

Epidemiologic surveys are performed on the national level, as well as by various states and cities. During World War II, a high caries rate was noted in the Northeast; Massachusetts ranked eighth in the nation in caries prevalence of its army inductees, with an average DMFT of 12.06. In 1950-51, Dr. William Wellock, State Dental Director, conducted a major dental survey of Massachusetts children and observed very high caries levels. Prior to the study documented

herein, Wellock's data was the only estimate of statewide caries prevalence levels. Yet, much has changed in 30 years. Prevention of dental caries has received more emphasis, dental care provider accessibility and productivity has increased, effective topical and systemic modes of receiving fluoride have been developed, and water fluoridation has been initiated in many communities. The City of Boston and the cities of the Metropolitan District Commission were fluoridated in 1978.

It is clearly important for these newly fluoridated communities that statistically sound caries data be obtained, so that in the future the effects of fluoridation can be studied. More broadly speaking, such data are essential because the allocation of resources for dental care must be based on need priorities determined from data which is as current as possible. In short, against the background of the many changes which have occurred, the current dental health of children in the Commonwealth of Massachusetts was not known and it was evident that a major state-wide dental survey was required.

The report presented here is the compilation of the available data for the 1979 survey of the school children of the City of Boston. The entire picture of the dental health of Massachusetts children cannot be drawn until the MDC data and that obtained from the remainder of the State are added in. However, as the largest population center in the State, and as a fluoridated community since 1978, it is of interest

to review the data for Boston apart from the rest, and that is the subject of this report.

II. Statement of Purpose

The Massachusetts State Health Plan states as one of its goals:

> "To improve the dental health of the residents of Massachusetts by implementing cost-effective preventive programs".

One of the objectives toward this goal is the assessing of "the oral health status of the population in Massachusetts .... for each HSA, before 1983". The study reported herein does this by characterizing the dental status of children in the Commonwealth with respect to dental caries, oral hygiene, gingivitis, orthodontic need and trauma.

The data collected in this study will allow us to gauge our progress in dental health over the past thirty years. In addition, by comparing these findings with available national data of the last ten years, we can evaluate our condition relative to the rest of the country. The survey results are necessary not only to characterize the current state of dental health, but to document the benefits which are expected to follow the fluoridation of community water supplies particularly the heavily populated MDC area. Meaningful evaluation of the fluoridation effort is practically impossible without sound baseline data on oral health status prior to its effect. Moreover, the prioritizing and planning of programs and resources to reduce the

incidence and prevalence of dental disease can best be accomplished by using up-to-date information on the magnitude and distribution of the disease.

III. Survey Methods

1. Sampling Plan

This survey attempts to characterize the dental health of those most susceptible to dental caries, the young. Therefore, the sample was chosen from pupils of elementary and secondary schools in Boston. This population includes nearly all persons between the ages of 5 and 16.

The sampling plan for the MDC cities and towns was designed with dual objectives in mind; the evaluation of the current level of dental disease, and the establishment of a basis for comparison over time of the effects of fluoridation. Boston, as a large and unique segment of the MDC warrants separate documentation. However, the sampling methodology for Boston was the same as for the rest of the MDC.

The Boston plan was as follows:

a. a sample of schools was chosen from the community.

b. a sample of pupils was chosen from the selected schools.

c. the students were selected on an individual rather than a cluster (classroom) basis, and chosen to vary in age.

Since dental caries, one of the major factors in this study,

increases with age, the sampling was designed to reliably estimate the prevalence in each separate age group (6 year olds to 18 year olds). Since variability in caries prevalence increases as the prevalence increases, and since any reductions in prevalence are measured on a "percentage reduction", it was appropriate to choose equal numbers of pupils in each age group.

Previous experience had shown that an examiner could carefully examine approximately 100 pupils per day in one location, and 80 or fewer if locations had to be changed. This factor had to override the desire to have the number sampled exactly proportional to the enrollment of each selected school.

In selecting the schools to be included, the school grade structures and sizes were examined. It was determined how many schools were needed to supply the necessary numbers of students per age category. Again, for practical reasons of time and transportation, the smallest unit per school was 40 children.

The schools were chosen with probability proportional to their enrollments, e.g., a school with 400 pupils was given twice the probability of being selected as one with 200 pupils. The schools were selected without replacement in order to include as many schools as possible from the different sections of the city, and to counteract large between-school variation. Those schools that did not fit the pattern of grade structure or which were all boys or all girls could

not be part of the regular "draw". These were set aside in a special pool and were selected by a separate process. Appendix I lists the selected Boston schools and the number of pupils which needed to be examined from each grade.

The selection of the actual students to be examined was not done until shortly before the examination, to avoid selecting students who may no longer have been in the school. Because of the possibilities of non-attendance on the day of the examination, refusal to be examined, or full orthodontic banding obscuring the dentition of a child, it was necessary to select a number somewhat larger than the target number for each school. These "alternates" were not examined until every attempt to examine the selected individuals had been made. However, demographic data was obtained on every student who was selected in order to determine if the subset of those selected, but not examined, differed from those who were examined. Experience in the Boston study showed that 30 percent overselection was necessary for elementary and junior high students, but at least 50 percent was required for high schools where attendance and compliance were generally lower.

The following methods were used to determine which students were to be selected from schools where a list of the children in each grade could be obtained:

a. The numbers in each grade were counted.

b. Each number was divided by the number of boys

needed from that grade, and also by the number of girls needed.

c. This number was used to select a random number from a table of random numbers. (Appendix 2).

d. That random number determined the children to be selected. For instance, if the random number were 7, and 4 boys were needed from a class of 39, the 7th, 17th, 27th and 37th students would be cited. If the selectees were not all boys, the boys closest to these numbers were chosen. Where there were ties, the selection alternated between the nearest below and the nearest above.

In schools where children were ungraded, or where grade lists were not available:

a. A list or card catalogue of all the children was obtained.

b. The list was divided by the number of children of each sex needed from each grade. This division created sets of names.

c. For each grade and sex, a number was randomly chosen between 1 and the product of the division of the class list. The child of the

desired grade and sex that was closest to that number on the class list was selected. This was repeated for each set of class lists, so that the correct number per sex was obtained.

The sampling fraction used in this plan was 2.23 percent for the MDC school children; approximately 500 children per grade or age group, and 6500 students overall. The sample size was based on considerations of applicability and of precision. The intention was to provide a baseline measure of pre-fluoridated MDC communities. The Boston part of the MDC survey, alone, was to include over 2000 children. This goal was virtually reached, with the actual examination of 1976 children.

2. Data Collection

There were two aspects to the data collection: the actual clinical examination, and a mail survey sent to the parents of the children in the sample.

Permission to conduct the survey was obtained from the Superintendent of Boston schools and from the Catholic Archdiocese of Boston. The target sample included children in grades K to 11. The field work was conducted by seven Forsyth dental examiners standardized to the use of the dental caries diagnostic criteria of the National Institute of Dental Research, as well as to the other indices used in this survey. The need to complete the examinations in a short period

of time necessitated the use of a large number of examiners. The examining period was a short and intensive one. Examiner calibration was carried out throughout the duration of the survey to help insure diagnostic consistency. All examinations were conducted with a portable light, a straight back chair and head rest, and mirrors and #23 explorers, individually sterilized and packaged for each exam. All faulty instruments were discarded. There was no variation in supplies and equipment between examiners. Findings were recorded by trained ancillary personnel on optical scanning sheets for subsequent analysis at the Harvard Computing Center. Clinical findings included caries, gingival condition, oral hygiene, orthodontic need and trauma.

Caries findings were determined by using the DMFT, DMFS, dft, and dfs indices, in accordance with the criteria of the National Institute of Dental Research. (These indices attempt to identify every decayed (D), missing (M), and filled (F) tooth (T) in the permanent dentition. Beyond this, it is also possible to characterize every decayed (D), missing (M), or filled (F) surface (S) on every permanent tooth available for inspection). Teeth which were unerupted or removed for orthodontic reasons were not included among the missing; likewise, restorations which were a sequel to trauma or which were ascertained to have been placed for aesthetic purposes were also not counted. This avoided inflating the M and F components of the indices with non-carious teeth and surfaces.

The deciduous dentition was examined in terms of decayed and filled teeth (dft) and decayed and filled surfaces (dfs). The lower case letters signify primary teeth, and the "missing" component is dropped because after the age of 5, an appreciable number of teeth are missing because of normal exfoliation.

Gingival health was assessed by means of the Gingival Index (G.I.) of Loe and Silness; this is a visual assessment, not using a periodontal probe. The Loe-Silness index was chosen because it is sufficiently refined to distinguish various gingival disease states in children, and yet it lends itself well to rapid survey techniques. With this method, the interdental papillae and the gingival margins of six selected teeth are scored on a scale of zero (healthy) to three (severe inflammation). The descriptions of the clinical states corresponding to each score are described in the original work by Loe and Silness, and all examiners were well versed in the criteria. The tissue on all four sides of each of the six teeth was examined; all six teeth also had to be present in order to record the index; as a result some children could not be evaluated due to lack of one or more of the designated teeth. The aggregate of the scores for an individual subject represented his/her gingival index.

The best known of the various indices for oral hygiene is that of Greene and Vermillion which was purposefully developed for large scale surveys. With this index, six pre-designated permanent teeth

were scored, on one surface each, on a scale of zero to three. Zero represents no debris, one represents debris on the gingival one-third of the tooth surface, two, the gingival two-thirds, and three represents a surface completely covered with debris. In this index, unlike the gingival index, adjacent teeth are substituted when the pre-designated teeth were not available. Notwithstanding, many 5 and 6 year olds did not have sufficient permanent dentition for this assessment. The aggregate score for the six teeth was the oral hygiene index for each subject.

The two best known orthodontic indices are those of Salzman and Grainger, the latter being somewhat more extensive and refined. Either one would take far more time per subject than could be afforded in a large-scale survey such as this one. No satisfactory and rapid index for orthodontic assessment could be found, so one was devised with the assistance of Dr. Coenraad Moorrees, Head of the Forsyth Orthodontic Department. Occlusal problems were divided into four categories: overjet, overbite, Class III malocclusion, and crowding. These findings were recorded predominantly in older children, where sufficient permanent dentition allowed for diagnosis. Rather than attempt a measure of severity of the malocclusions, only cases regarded as severe and in need of treatment were noted. The criteria for determining severity was as follows:

a. Overjet: 5 or more mm between the most anterior

tooth of the mandible and the anterior teeth of the maxilla as measured by a marked tongue blade or toothpick.

b. Overbite: the eclipse of two-thirds or more of lower anterior crowns by the maxillary anteriors. Negative overbite (open bite) was determined by a space equal to two-thirds or more of the length of mandibular anterior crowns between the mandibular and maxillary incisors.

c. Class III: all Class III malocclusions were considered severe, with the exception of teeth that were edge to edge.

d. Crowding: space equivalent to the mesial-distal diameter of a lower incisor missing in either the maxillary or mandibular arch was considered severe.

No attempt was made to record the children who had undergone orthodontic treatment in the past, since the main effort of this survey

was to determine treatment needs. Those currently in treatment were not usually examined due to the obscuring of their teeth by bands; children with removable retainers, however, were examined.

The most common form of dental trauma encountered is injury to the anterior teeth. Ellis and Davey have classified such injuries in a simple and clear way which is useful for the clinician. This scheme is standard in pediatric dentistry, but, because it relies on the clinical appearance of the tooth shortly after the traumatic incident, it cannot be entirely useful to the epidemiologist. However, an adaptation of this index was derived. In this survey, any trauma, whether or not it was repaired, was recorded on a scale of 1 to 3. These classifications correspond to the first three classes of the Ellis and Davey scheme.

Class 1: Simple fracture involving little or no dentin.

Class 2: More extensive fracture of the crown involving dentin, but not the dental pulp.

Class 3: Extensive fracture of the crown, involving considerable dentin and evidence of exposure of the dental pulp. In this class, most or all of the tooth's crown was destroyed.

Treatment need categories were restricted to those teeth in

need of endodontic treatment

The second aspect of the study was the mail survey of parents. Addresses and telephone numbers of parents or guardians were obtained for each child in the target sample. These addresses and numbers were verified by the examination recorders during the actual clinical exams in the schools. The questionnaire for the parents was designed jointly by the Massachusetts Department of Public Health, the Harvard School of Public Health, and the Forsyth Dental Center. Every attempt was made to produce a clear, easy to read form with as little ambiguity as possible. Non-English questionnaires were printed and used when indicated by school personnel that they would be necessary. A copy of this survey instrument is affixed to the report (Appendix 3). Care was taken to avoid violation of privacy, yet still obtain the needed information. For example, level of parental education (Question 19) and the usual method of dental bill payment (Question 18), are used as indirect indicators of socio-economic status.

During the summer and fall of 1979, questionnaires were mailed to the parents of children who had been examined previously. Each form contained a code number, so that the returned copy could be matched to the appropriate child. This allows for age-specific comparisons between oral health findings and the findings obtained by the mail survey.

A reasonable period of time was allowed to elapse before the non-respondents received a second, and eventually, a third mailing.

In order to determine if the non-respondents (and their children) differed from the respondents, a sub-sample of non-respondents was surveyed by telephone. Three age groups were selected for this sub-sample (8, 12, and 16). The age groups were selected so that there would be a large enough number of non-respondents in the event that all analyses had to be carried out on these groups alone. This would be necessary in the event that the respondents differed significantly from the non-respondents. The tabulations of the mail survey were carried out by the Harvard Computing Center, and completed during the summer of 1980.

The response rate for the combined mail and telephone survey was 63 percent which is considered satisfactory for this type of polling effort.

Appendix 4 contains examples of the recording sheets used for the various indices, as well as the form given to each child to take home to his/her parent. Children classified as IV (immediate treatment required) were not given the form; rather, it was turned in to the school nurse or an appropriate school official, to be mailed to the parents.

IV. Findings

1. Caries Findings

One thousand, nine hundred and seventy six children, predominantly between the ages of 4 and 18 (six were in the age group 19-21) were examined. The basic dental findings in terms of DMF (permanent) teeth by age and sex are presented in Table 1.1 and Figure 1.1. The trends for each sex are similar in each age group, although the values for females are generally higher than for males. This is consistent with the nationwide caries study (HANES) as well as the MDC phase of this current study.

The DMFT values start at near zero for five and six year olds and climb steadily to approximately 10+ at age 17, the last level for which there are reasonable sample sizes. Thus, there is an implied increment of roughly one tooth per year per child.

The "M" component was intended to include only teeth missing due to caries, and that distinction was made by the examiners and recorded in longhand. However, during the keypunching of the data into the computer, this distinction was lost, and teeth missing due to orthodontics or trauma were included with those missing due to caries. In preparing this report, the data was analyzed to determine the exact inflation of the "M" component. It was found that 26 percent of the 465 missing teeth were extracted for reasons other than caries. This is equivalent to 36 children, or 15.8 percent of the 228 children

Table 1.1

Permanent Teeth -- Means by Sex N = 1976

Age	Sex	N	Teeth	DT	MT	FT	DMFT	MT/DMFT	FT/DMFT	SURFACES	DFS	FS/DFS
4	M	3	0.33	0.00	0.33	0.00	0.33	1.00	0.00	0.00	0.00	.
4	F	3	0.00	0.00	0.00	0.00	0.00	.	.	0.00	0.00	.
5	M	35	1.69	0.00	0.00	0.03	0.03	0.00	1.00	7.46	0.03	1.00
5	F	38	1.79	0.24	0.00	0.05	0.29	0.00	1.18	8.00	0.42	0.38
6	M	49	5.20	0.20	0.00	0.12	0.33	0.00	0.38	23.41	0.41	0.50
6	F	43	7.05	0.21	0.00	0.16	0.37	0.00	0.44	31.37	0.53	0.57
7	M	77	9.18	0.64	0.00	0.26	0.90	0.00	0.29	40.57	1.14	0.35
7	F	75	9.85	0.49	0.00	0.56	1.05	0.00	0.53	43.29	1.45	0.56
8	M	93	11.84	0.45	0.01	0.73	1.19	0.01	0.61	51.83	1.63	0.69
8	F	99	12.55	1.07	0.00	0.74	1.81	0.00	0.41	54.89	2.79	0.48
9	M	82	13.71	0.71	0.02	1.51	2.24	0.01	0.67	60.21	3.40	0.73
9	F	94	14.86	0.81	0.07	1.43	2.31	0.03	0.62	64.95	3.18	0.67
10	M	90	16.67	0.83	0.02	1.98	2.83	0.01	0.70	73.84	4.74	0.73
10	F	85	20.72	1.18	0.11	2.36	3.65	0.03	0.65	92.36	5.58	0.70
11	M	63	21.24	1.05	0.08	2.03	3.16	0.03	0.64	94.98	5.37	0.68
11	F	64	23.80	1.34	0.28	3.11	4.73	0.06	0.66	106.03	7.72	0.77
12	M	83	24.77	1.60	0.13	2.27	4.00	0.03	0.57	111.63	6.40	0.66
12	F	82	26.02	1.45	0.12	3.56	5.13	0.02	0.69	117.72	8.20	0.79

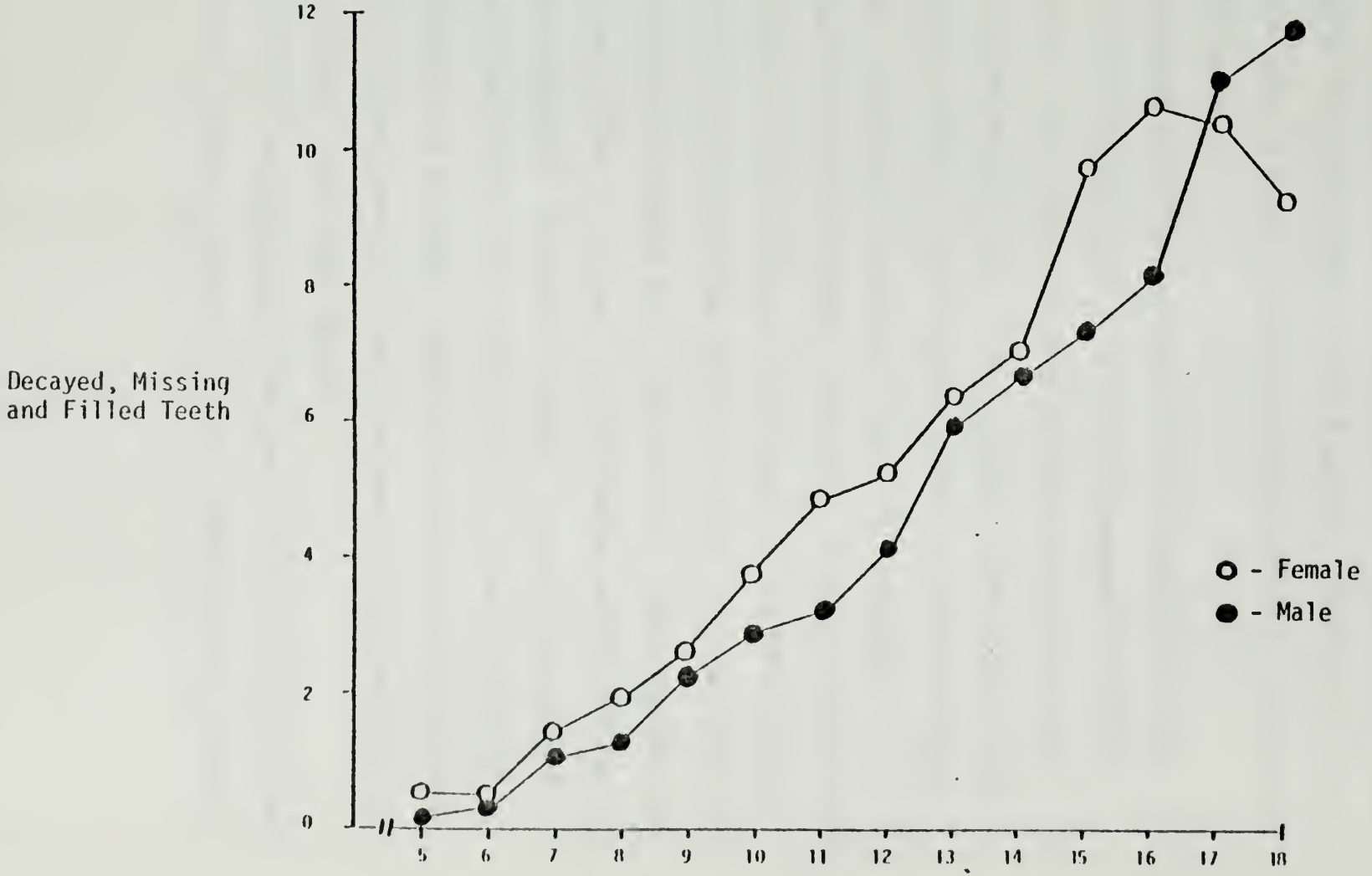
Table 1.1 (cont'd)

Permanent Teeth -- Means by Sex N = 1976

Age	Sex	N	Teeth	DT	MT	FT	DMFT	MT/DMFT	FT/DMFT	SURFACES	DFS	FS/DFS
13	M	83	26.71	1.57	0.14	4.11	5.82	0.03	0.71	121.05	9.72	0.76
13	F	88	27.03	1.93	0.20	4.09	6.23	0.03	0.66	122.30	9.91	0.75
14	M	80	27.57	1.72	0.35	4.54	6.61	0.05	0.69	124.21	10.09	0.76
14	F	73	27.58	1.92	0.33	4.74	6.99	0.05	0.68	124.25	11.75	0.77
15	M	82	27.73	1.66	0.46	5.20	7.32	0.06	0.71	124.40	12.38	0.79
15	F	102	27.35	1.40	0.48	7.75	9.63	0.05	0.80	122.51	15.52	0.89
16	M	72	27.79	1.33	0.46	6.22	8.01	0.06	0.78	124.68	12.24	0.85
16	F	87	27.67	1.77	0.55	8.13	10.45	0.05	0.78	123.75	17.51	0.86
17	M	64	27.92	1.81	0.81	8.25	10.88	0.08	0.76	123.61	18.84	0.86
17	F	54	27.67	1.46	0.91	8.04	10.41	0.09	0.77	121.83	16.46	0.87
18	M	15	27.67	2.67	1.53	7.60	11.80	0.13	0.64	118.80	17.27	0.80
18	F	12	27.67	2.58	0.58	6.17	9.33	0.06	0.66	123.42	15.17	0.76
19	M	3	28.00	3.67	0.67	6.33	10.67	0.06	0.59	124.67	15.33	0.72
20	M	1	28.00	2.00	4.00	2.00	8.00	0.50	0.25	108.00	4.00	0.50
20	F	1	28.00	9.00	6.00	1.00	16.00	0.38	0.06	98.00	21.00	0.24
21	M	1	26.00	0.00	0.00	0.00	0.00	.	.	120.00	0.00	.

. Unknown or not calculable

Figure 1.1 Plot of Decayed, Missing and Filled Teeth by Age for Males and Females



with missing permanent teeth. The "M" component comprises only about 5 percent of the DMFT, and the teeth missing for reasons other than caries comprise only 26 percent of this 5 percent. Therefore, the DMFT values listed in Table 1.1 may be slightly inflated, but only by a very small margin.

The decayed and filled surfaces are also reported in Table 1.1 and shown graphically in Figure 1.2. The "M" component is dropped here, since it is not certain how many carious surfaces are associated with a given missing tooth. The slightly higher values for females are again evident. The DF surface counts rise from virtually zero at ages five and six to values of about 16-19 at age 17. The implied annual DF surface increment, therefore, is about 1-1/3 to 1-1/2.

In Figure 1.3, the ratio of filled teeth to the DMFT has been plotted against age for males and females. Figure 1.4 shows the ratio of filled surfaces to decayed and filled surfaces. These figures run in parallel and reflect the extent to which needed dental restorative care is being obtained. The ratio is about 1 at age five, drops to 0.4-0.6, and then climbs in the older ages to a value of about 0.8 at age 17. Females have a slightly higher ratio than boys after age 13. Thus, Boston children have had 65 to 85 percent of their restorative needs for permanent teeth taken care of.

The ratio of missing teeth to decayed, filled and missing teeth by age and sex is shown in Figure 1.5. This index remains essentially

Figure 1.2 Plot of Decayed and Filled Surfaces by Age for Males and Females

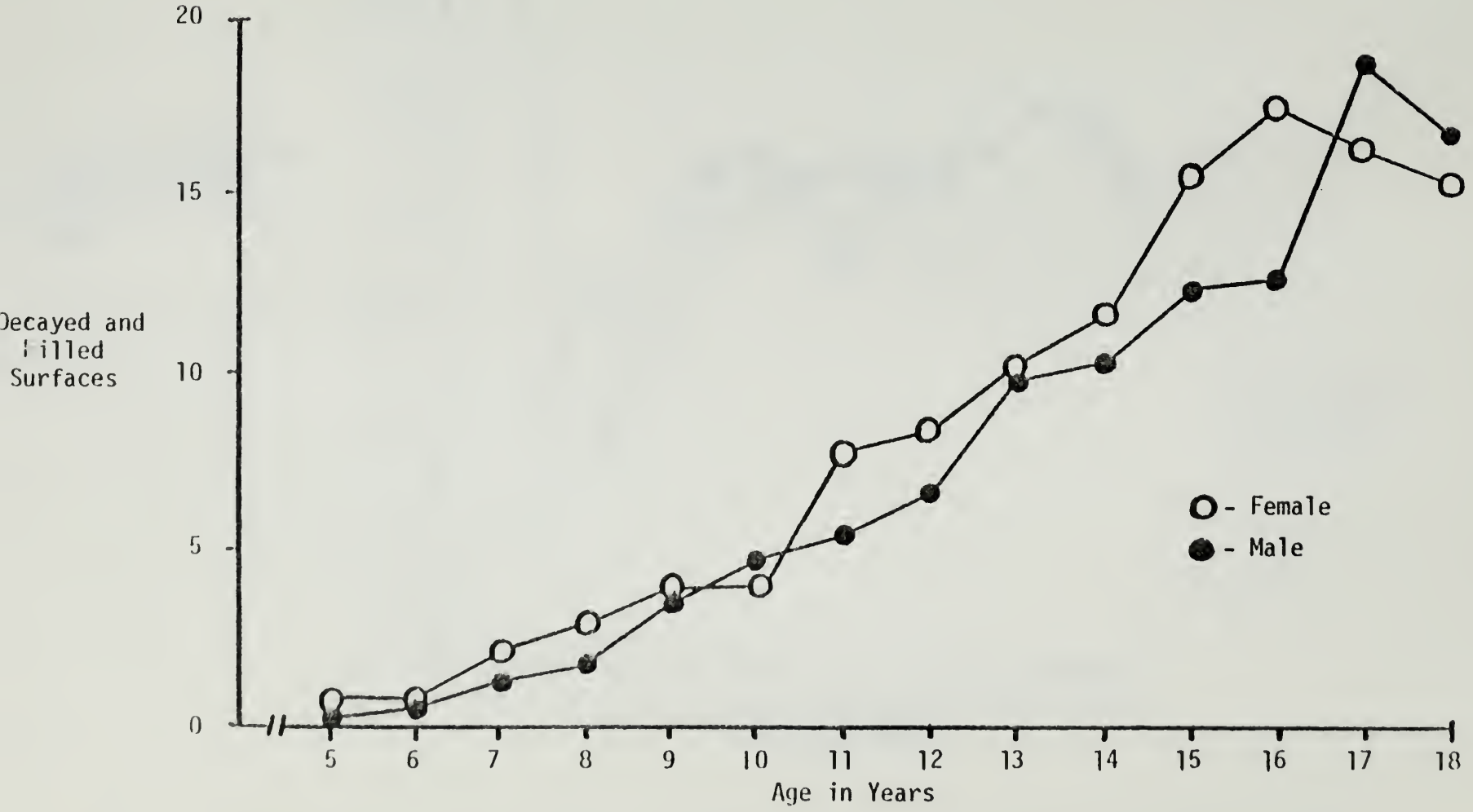


Figure 1.3 Plot of FT/DMFT by Age for Males and Females

The ratio of Filled Teeth to Decayed, Missing and Filled Teeth

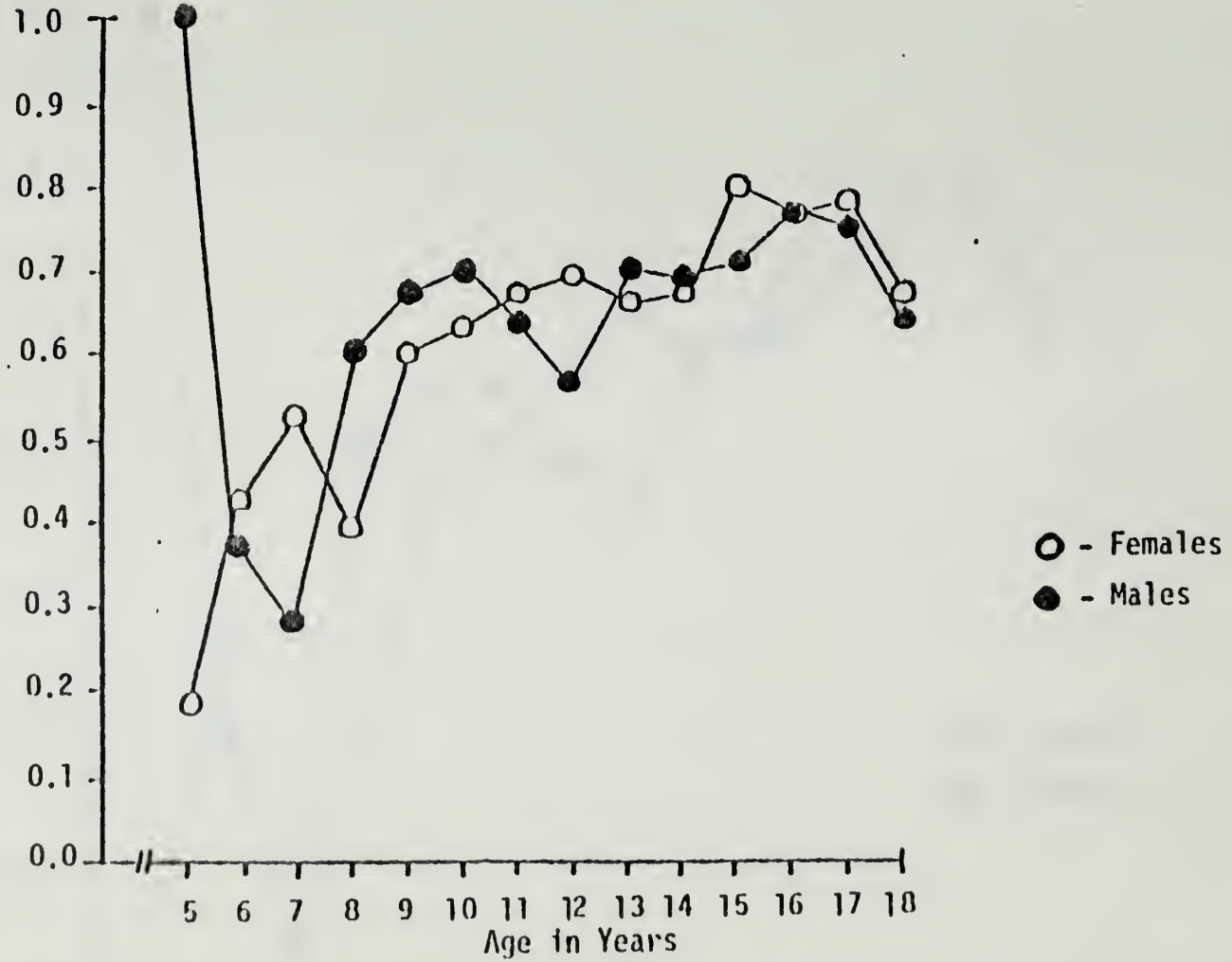


Figure 1.4 Plot of FS/DFS by Age for Males and Females

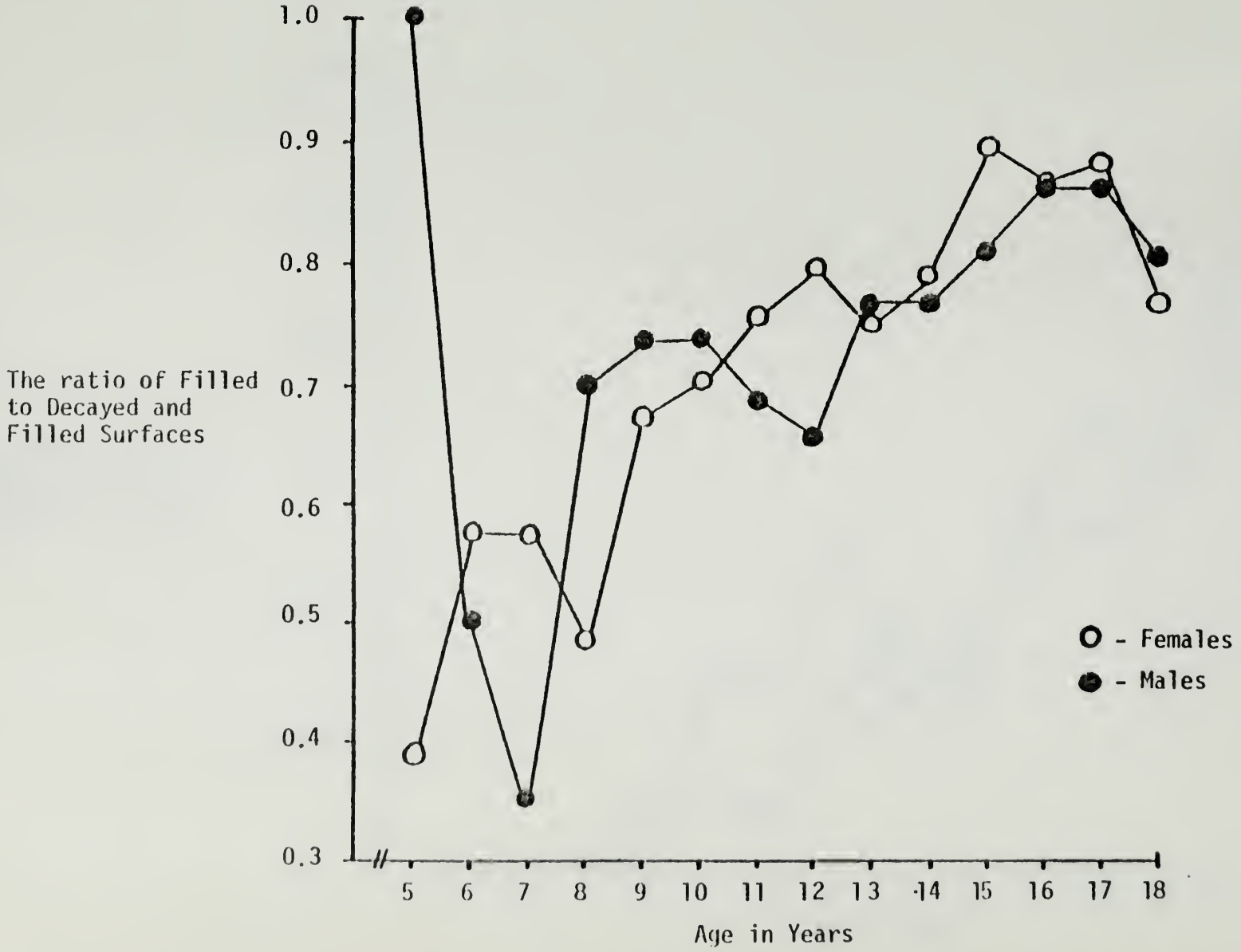
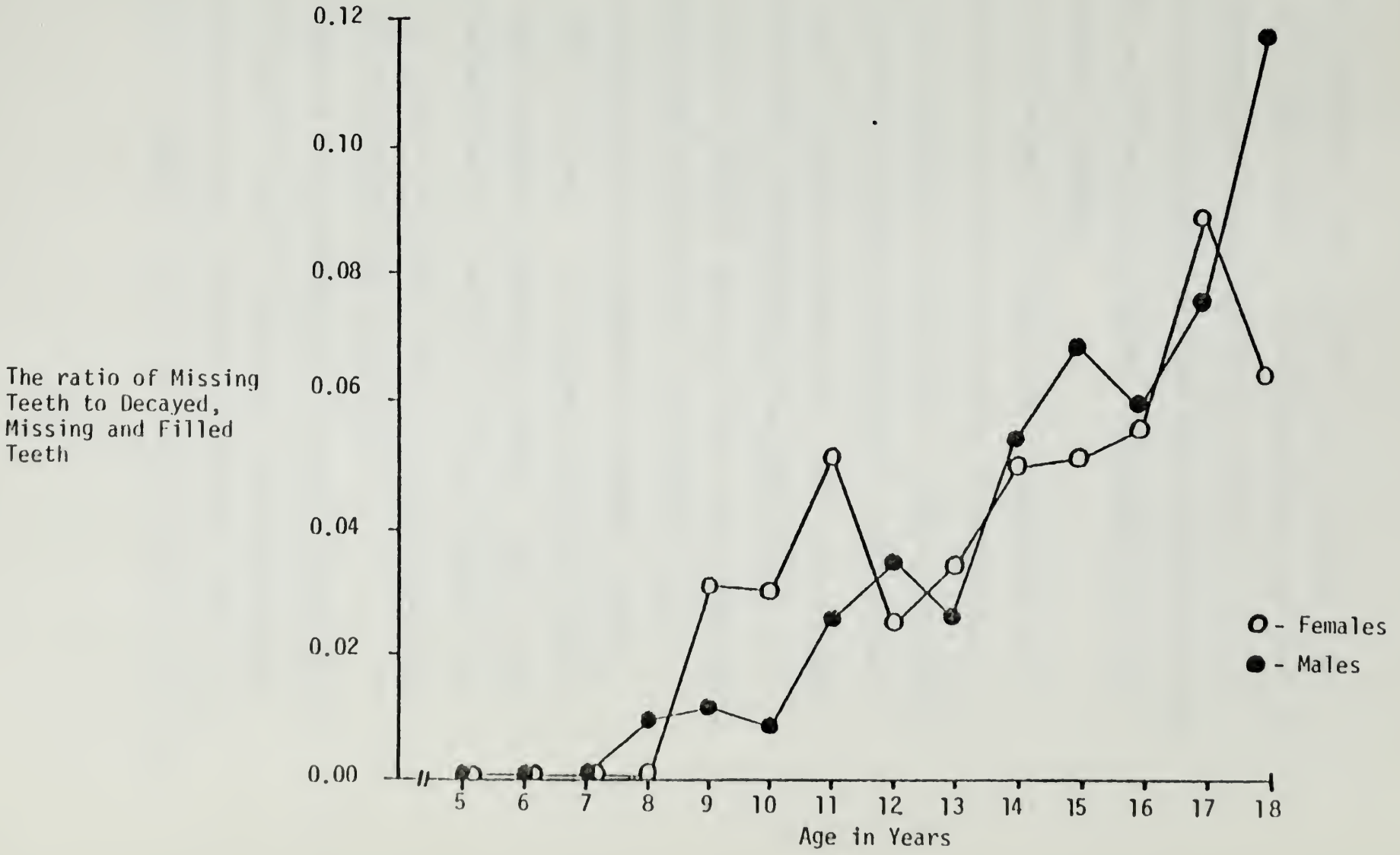


Figure 1.5 MT/DMFT by Age for Males and Females



at or near zero through age eight, and then rises to a value of approximately 0.07 - 0.08 at age 17. It is interesting to note that the tooth most frequently missing among the Boston children was the lower right first molar, with the lower left first molar a close second, and these two teeth were often missing together. The upper molars were missing with much less frequency.

The caries experience in deciduous teeth is expressed as df surfaces. The nature of the exfoliation process of the deciduous dentition makes the "M" component difficult to use. Table 1.2 and Figure 1.6 summarize the deciduous teeth caries experience. From a value of about 3 dfs at age five, caries increases until age 7 or 8, and then declines to coincide with the exfoliation of deciduous teeth. The over-all relationship of males to females as seen in the caries experience of permanent teeth is not evident in the deciduous teeth.

Race was divided into four categories for computer analysis: white, black, other and unknown. This approach yielded sufficient a sample size in each category for meaningful analysis. Table 1.3 summarizes the caries experience of the Boston children by age and race. Figures 1.7, 1.8, 1.9 and 1.10 contain findings by age and race relative to DMFT, DFS, FT/DMFT and FS/DFS respectively.

There appears to be little difference in caries findings between whites and non-whites until age 17, beyond which sample sizes become small. It is evident that there are little differences in DMFT between whites and blacks. In Figures 1.9 and 1.10, it can be seen that non-whites

Table 1.2

Deciduous Teeth -- Means by Sex N = 1158

Age	Sex	N	Teeth	DT	FT	DFT	FT/DFT	SURFACES	DFS	FS/DFS
4	M	3	19.67	0.00	1.67	1.67	1.00	86.33	2.00	1.00
4	F	3	20.00	2.67	0.67	3.33	0.20	88.00	4.00	0.17
5	M	35	18.63	1.03	1.00	2.03	0.49	82.49	3.20	0.62
5	F	38	18.76	1.11	0.87	1.97	0.44	83.00	3.00	0.49
6	M	49	16.47	1.02	1.82	2.84	0.64	73.69	5.37	0.66
6	F	43	15.14	1.12	1.14	2.26	0.51	68.35	4.40	0.56
7	M	77	13.49	1.09	1.56	2.65	0.59	61.53	5.58	0.66
7	F	75	12.72	1.59	2.40	3.99	0.60	58.63	8.79	0.65
8	M	93	11.20	1.11	2.30	3.41	0.68	51.96	7.31	0.73
8	F	99	10.09	1.11	1.57	2.68	0.59	47.02	5.65	0.62
9	M	82	8.96	1.04	2.16	3.20	0.68	41.63	6.82	0.71
9	F	94	8.05	0.72	1.82	2.54	0.72	37.81	5.20	0.77
10	M	90	6.41	0.73	1.96	2.69	0.73	29.93	5.79	0.74
10	F	85	3.65	0.31	1.08	1.39	0.78	17.28	3.13	0.80
11	M	63	3.10	0.27	0.84	1.11	0.76	14.70	2.24	0.84
11	F	64	1.30	0.06	0.59	0.66	0.91	6.22	1.72	0.96
12	M	83	1.24	0.25	0.23	0.48	0.48	5.93	0.99	0.51
12	F	82	0.62	0.05	0.13	0.18	0.73	2.96	0.40	0.79

Males = 575
Females= 583

Figure 1.6. Plot of Decayed and Filled Surfaces by Age for Males and Females (Deciduous)

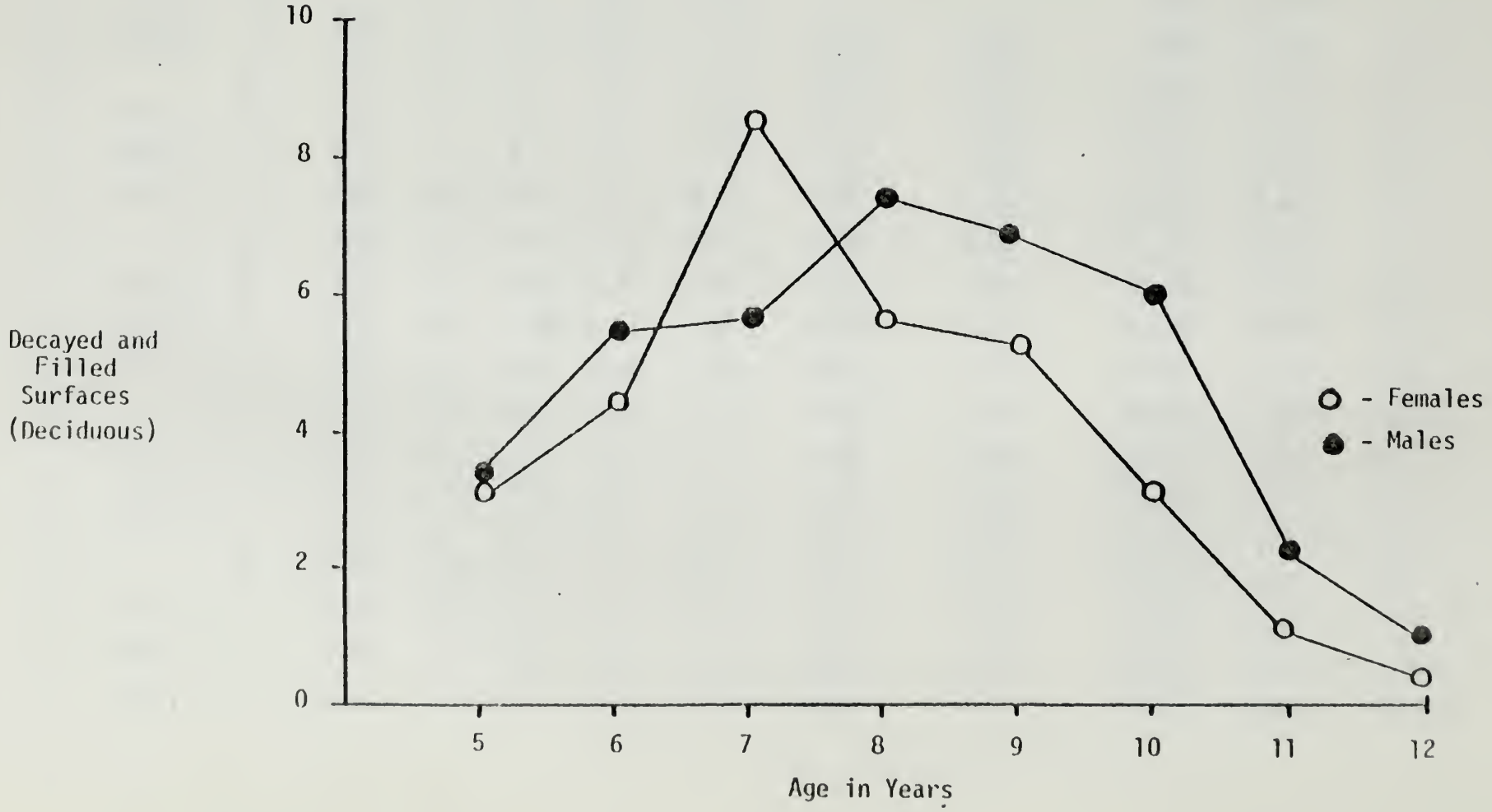


Table 1.3

Permanent Teeth -- Means by Race

Age	Race	N	Teeth	DT	MT	FT	DMFT	MT/DMFT	FT/DMFT	Surfaces	DFS	FS/DFS
5	.	12	2.08	0.00	0.00	0.00	0.00	.	.	9.33	0.00	.
5	Black	14	4.43	0.64	0.00	0.14	0.79	0.00	0.18	19.29	1.14	0.38
5	White	40	0,85	0,00	0.00	0.00	0.00	.	.	3.88	0.00	.
5	Other	7	0.86	0.00	0.00	0.14	0.14	0.00	1.00	4.00	0.14	1.00
6	.	15	8.47	0.07	0.00	0.47	0.53	0.00	0.88	38.07	1.07	0.94
6	Black	27	7.33	0.37	0.00	0.04	0.41	0.00	0.09	32.33	0.44	0.17
6	White	42	4.43	0.10	0.00	0.10	0.19	0.00	0.50	20.10	0.19	0.50
6	Other	8	5.88	0.50	0.00	0.13	0.63	0.00	0.20	26.00	0.88	0.29
7	.	20	9.60	0.10	0.00	0.40	0.50	0.00	0.80	42.55	0.90	0.83
7	Black	68	9.72	0.71	0.00	0.31	1.01	0.00	0.30	42.59	1.29	0.32
7	White	47	9.13	0.43	0.00	0.55	0.98	0.00	0.57	40.45	1.23	0.64
7	Other	17	9.65	0.94	0.00	0.41	1.35	0.00	0.30	42.53	1.94	0.36
8	.	32	11.06	0.28	0.00	0.84	1.13	0.00	0.75	48.78	1.97	0.84
8	Black	74	12.99	1.00	0.00	0.68	1.68	0.00	0.40	56.64	2.62	0.50
8	White	72	11.96	0.85	0.01	0.79	1.65	0.01	0.48	52.32	2.17	0.50
8	Other	14	11.93	0.29	0.00	0.50	0.79	0.00	0.64	52.50	1.07	0.73
9	.	18	13.33	0.44	0.17	1.50	2.11	0.08	0.71	57.89	3.22	0.81
9	Black	65	14.98	0.97	0.03	1.49	2.49	0.01	0.60	65.92	3.78	0.65
9	White	78	13.92	0.54	0.05	1.45	2.04	0.03	0.71	60.83	2.74	0.75
9	Other	15	14.73	1.40	0.00	1.40	2.80	0.00	0.50	64.67	4.00	0.62

Table 1.3 (cont'd)

Permanent Teeth -- Means by Race

Age	Race	N	Teeth	DT	MT	FT	DMFT	MT/DMFT	FT/DMFT	Surfaces	DFS	FS/DFS
10	.	17	17.53	0.47	0.06	2.24	2.76	0.02	0.81	77.53	4.29	0.89
10	Black	70	19.10	1.47	0.01	1.66	3.14	0.01	0.53	85.34	4.94	0.58
10	White	68	18.06	0.59	0.12	2.66	3.37	0.04	0.79	79.85	5.38	0.83
10	Other	20	19.90	1.20	0.05	2.20	3.45	0.01	0.64	88.75	5.80	0.67
11	.	17	22.47	0.59	0.24	2.35	3.18	0.07	0.74	99.94	5.00	0.86
11	Black	43	23.33	1.42	0.23	2.37	4.02	0.06	0.59	104.09	6.37	0.68
11	White	56	21.71	1.29	0.11	2.79	4.18	0.03	0.67	97.09	7.39	0.74
11	Other	11	23.64	0.82	0.27	2.64	3.73	0.07	0.71	105.27	5.36	0.75
12	.	16	24.56	0.88	0.25	1.75	2.88	0.09	0.61	110.19	5.00	0.76
12	Black	65	25.77	2.11	0.15	2.77	5.03	0.03	0.55	116.29	8.11	0.66
12	White	72	25.22	1.17	0.07	3.28	4.51	0.02	0.73	114.14	7.14	0.80
12	Other	12	25.50	1.42	0.17	3.00	4.58	0.04	0.66	114.83	6.83	0.73
13	.	33	27.52	1.36	0.18	4.45	6.00	0.03	0.74	124.70	9.58	0.80
13	Black	48	26.35	2.10	0.29	3.77	6.17	0.05	0.61	118.65	10.29	0.72
13	White	73	26.90	1.59	0.11	4.56	6.26	0.02	0.73	122.11	10.36	0.79
13	Other	17	27.00	2.24	0.12	2.35	4.71	0.03	0.50	122.65	6.65	0.55
14	.	23	27.78	1.91	0.35	4.57	6.83	0.05	0.67	125.22	10.48	0.70
14	Black	50	27.40	2.60	0.18	3.98	6.76	0.03	0.59	124.16	10.90	0.68
14	White	65	27.55	1.43	0.46	5.49	7.38	0.06	0.74	123.52	12.26	0.84
14	Other	15	27.93	0.73	0.33	3.20	4.27	0.08	0.75	126.00	5.47	0.83

Table 1.3 (cont'd)

Permanent Teeth -- Means by Race

Age	Race	N	Teeth	DT	MT	FT	DMFT	MT/DMFT	FT/DMFT	Surfaces	DFS	FS/DFS
15	.	37	27.78	1.51	0.65	7.57	9.73	0.07	0.78	123.73	16.76	0.89
15	Black	56	27.75	2.16	0.41	6.41	8.98	0.05	0.71	124.71	15.43	0.78
15	White	79	27.20	1.22	0.41	6.63	8.25	0.05	0.80	122.18	12.81	0.88
15	Other	12	27.75	0.50	0.67	4.42	5.58	0.12	0.79	123.58	8.50	0.94
16	.	30	27.63	0.60	0.27	7.90	8.77	0.03	0.90	125.03	14.50	0.95
16	Black	54	27.69	2.19	0.30	6.81	9.30	0.03	0.73	125.02	15.70	0.80
16	White	62	27.76	1.15	0.61	8.18	9.94	0.06	0.82	123.74	15.81	0.90
16	Other	13	27.92	3.31	1.46	3.31	8.08	0.18	0.41	120.69	10.85	0.58
17	.	30	27.80	1.23	0.33	8.20	9.77	0.03	0.84	125.33	16.97	0.90
17	Black	39	27.82	2.72	0.97	6.54	10.23	0.10	0.64	122.23	17.54	0.77
17	White	46	27.87	1.07	1.13	9.63	11.83	0.10	0.81	121.83	18.59	0.92
17	Other	3	26.67	1.00	0.33	6.00	7.33	0.05	0.82	119.67	15.67	0.83
18	.	7	27.86	1.71	0.29	7.71	9.71	0.03	0.79	125.86	16.86	0.88
18	Black	11	27.55	4.00	1.18	6.09	11.27	0.11	0.54	120.00	15.36	0.63
18	White	6	28.00	1.67	2.17	9.50	13.33	0.16	0.71	117.17	22.00	0.89
18	Other	3	27.00	1.67	0.67	3.33	5.67	0.12	0.59	119.67	7.33	0.77
19	White	2	28.00	5.50	1.00	8.50	15.00	0.07	0.57	123.00	22.00	0.71
19	Other	1	28.00	0.00	0.00	2.00	2.00	0.00	1.00	128.00	2.00	1.00
20	.	1	28.00	2.00	4.00	2.00	8.00	0.50	0.25	108.00	4.00	0.50
20	Other	1	28.00	9.00	6.00	1.00	16.00	0.38	0.06	98.00	21.00	0.24
21	Other	1	26.00	0.00	0.00	0.00	0.00	.	.	120.00	0.00	.

. Unknown

Figure 1.7 Plot of Decayed, Missing and Filled Teeth by Age and Race

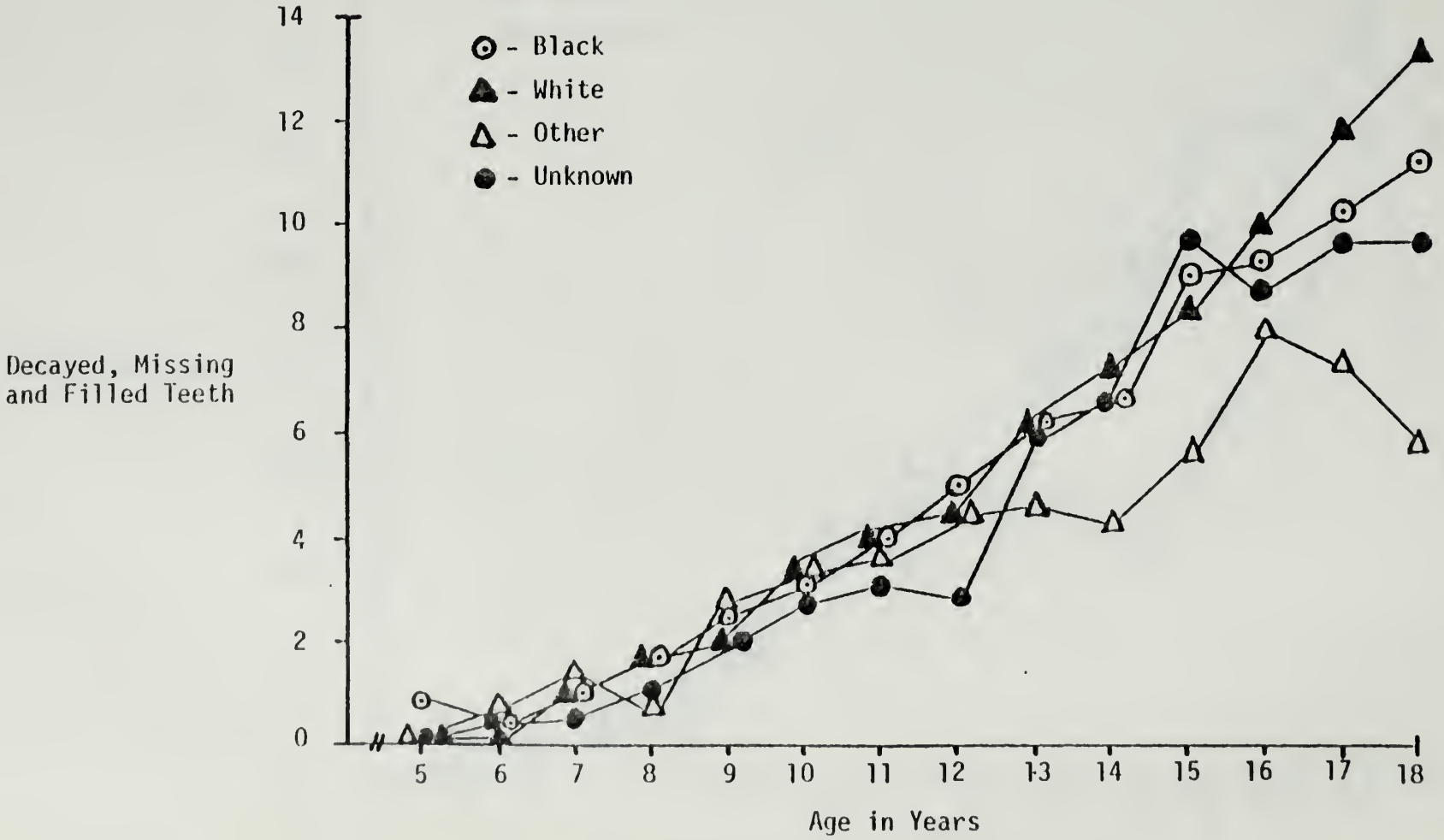


Figure 1.8 Plot of Decayed and Filled Surfaces by Age and Race

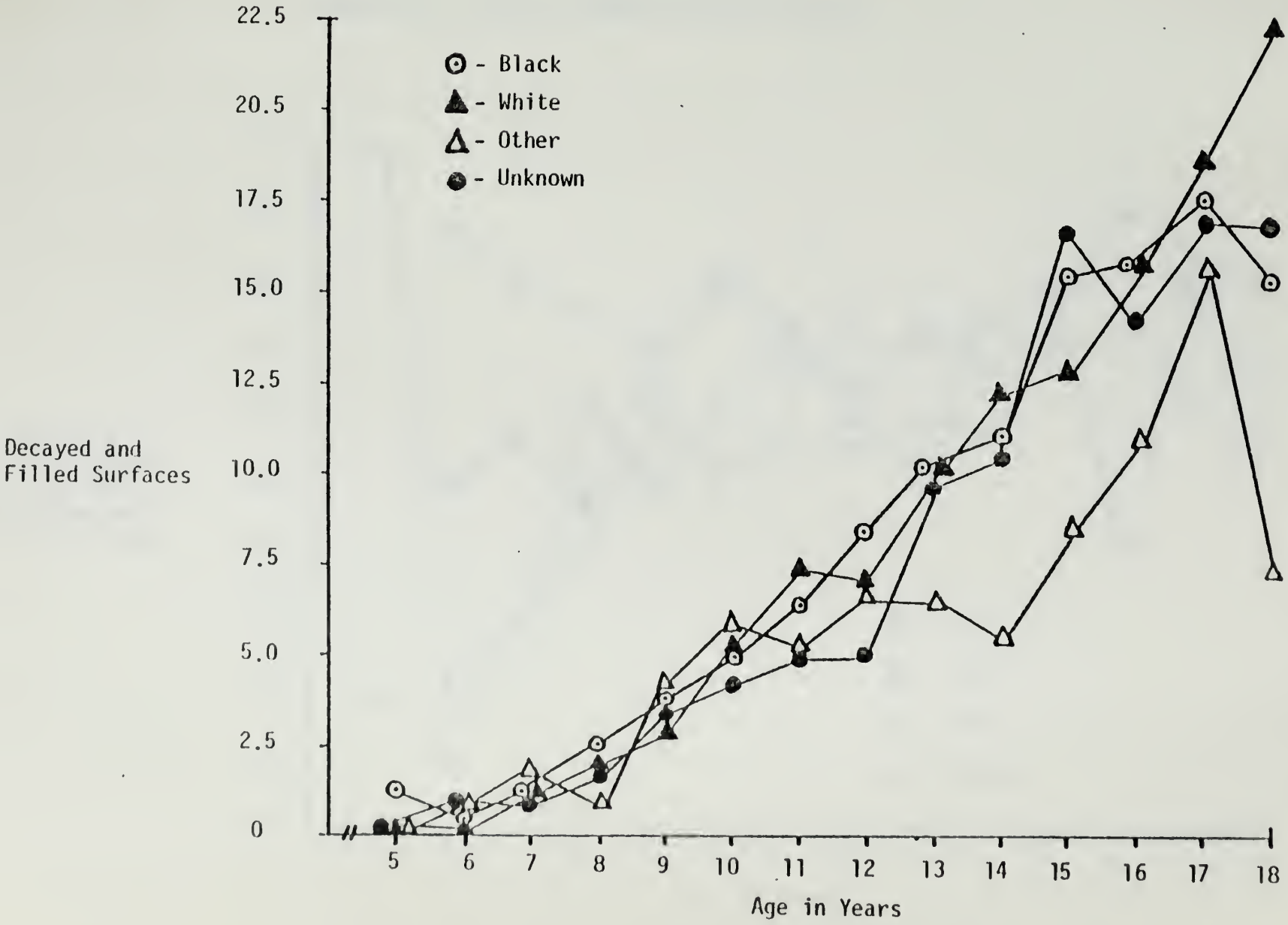


Figure 1.9 Plot of FT/DMFT by Age and Race

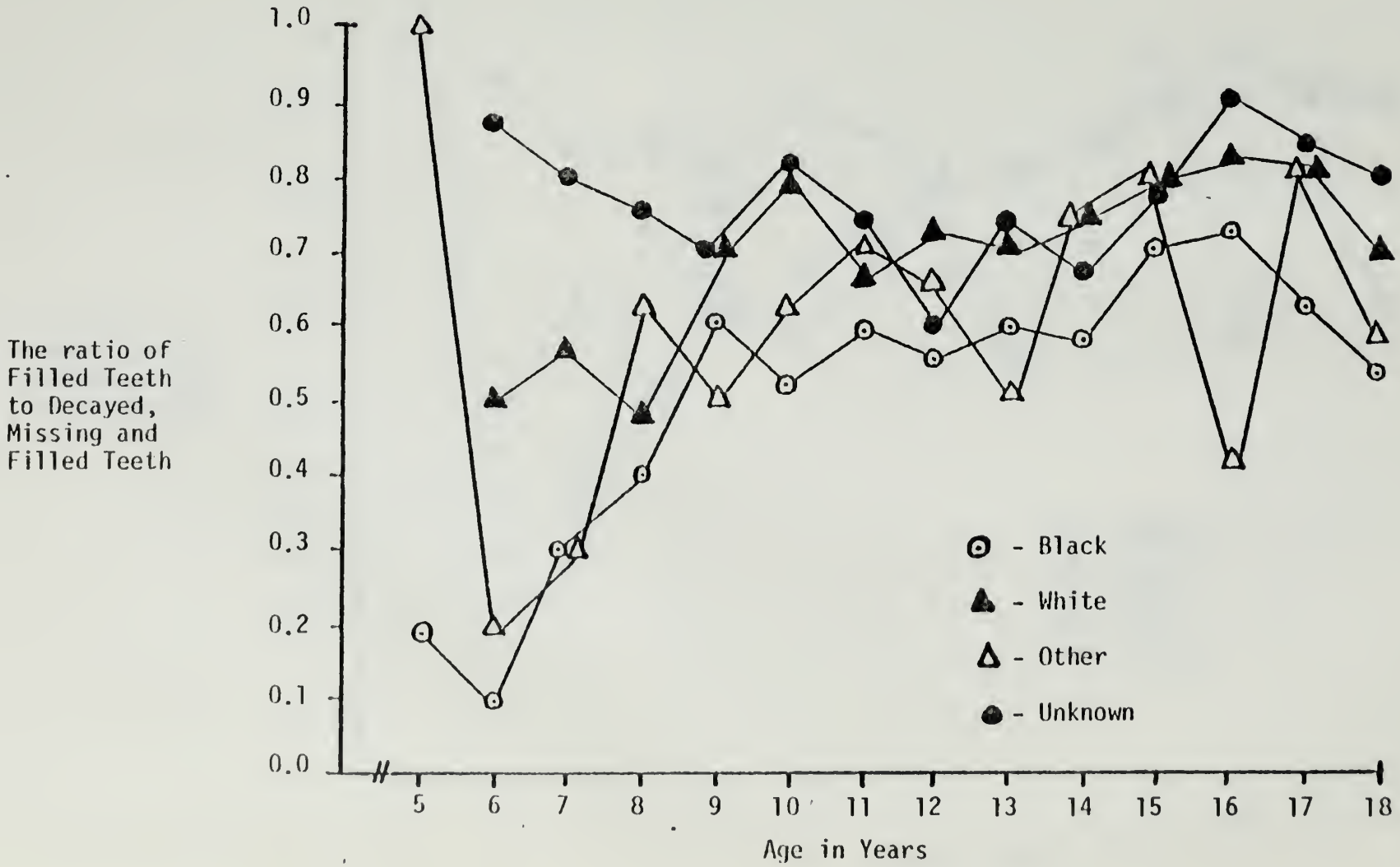
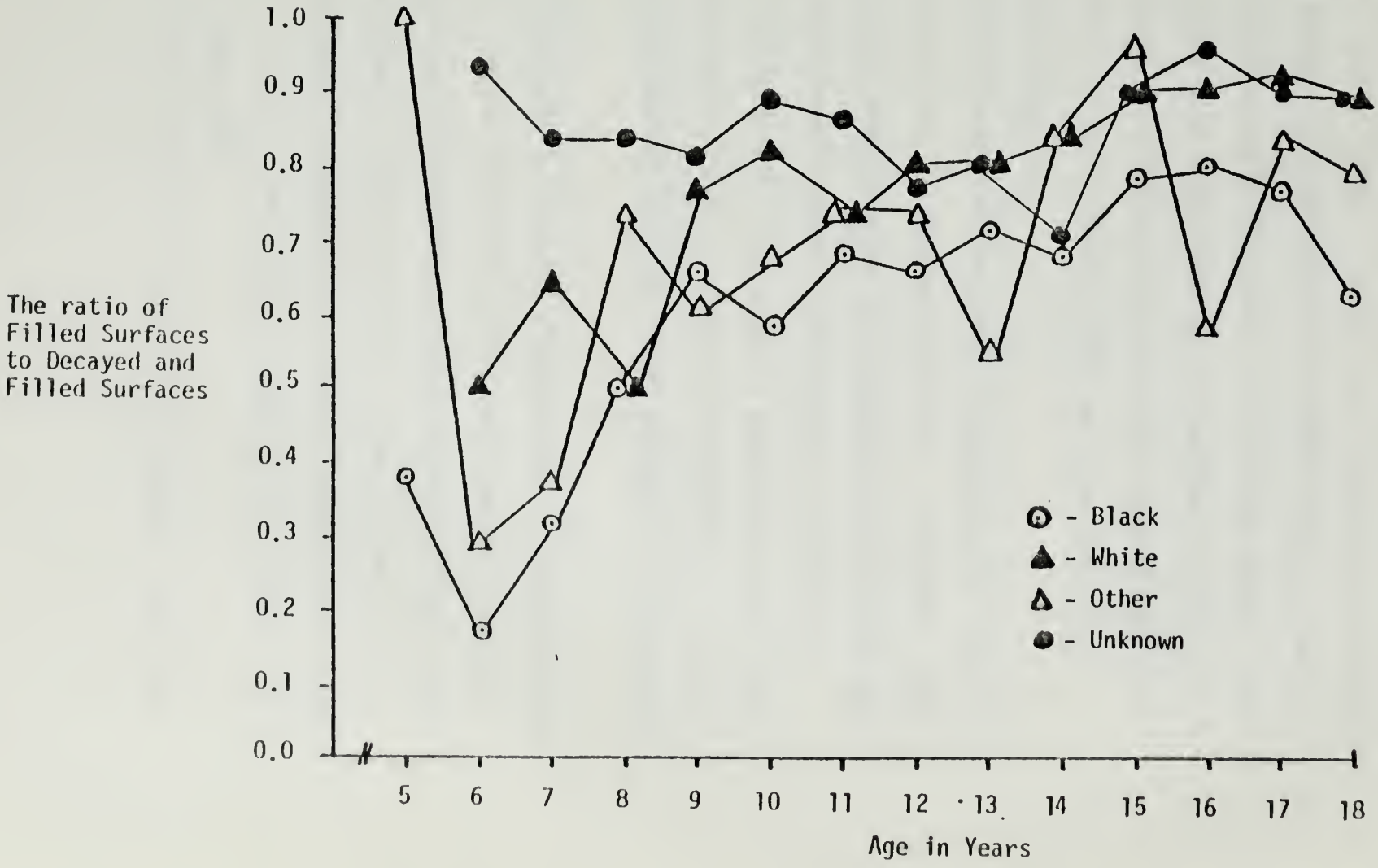


Figure 1.10 Plot of FS/DFS by Age and Race



have a lower level of restorative treatment than their white counterparts. Since the number of missing teeth is not substantially different from one race to another, the difference in FT/DMFT ratios can only be attributed to the difference in the number of filled and decayed teeth.

Table 1.4 and Figure 1.11 summarize the deciduous caries experience by age and race. At ages 4-6, non-whites had a higher number of dfs; at age 7, the situation reverses itself, and from that point whites tend to have higher dfs.

The information about permanent teeth is summarized in Table 1.5. Table 1.6 does the same for the deciduous dentition. The sample means and standard deviations reported here were computed using formulas appropriate for a simple random design, and therefore, are slightly smaller than they should be since the study is based upon a multi-stage clustered sampling design. Extensive weighting procedures are required for more precise estimates and this may be the subject of later analytical work.

Figure 1.12 presents a frequency distribution of permanent teeth caries in order to show how the DMFT is distributed among the children examined. Those with a DMFT of zero are largely made up of the younger children with few permanent teeth at risk for a short period of time. For instance, more than 80 percent of 4, 5, and 6 year olds had a permanent DMFT of zero. It can be seen that the majority of children fall in the area between 1 and 8 DMFT.

Figure 1.13 gives the distribution for the deciduous dentition.

Table 1.4

Deciduous Teeth -- Means by Race

Age	Race	N	Teeth	DT	FT	DFT	FT/DFT	Surfaces	DFS	FS/DFS
5	.	12	18.75	1.33	0.67	2.00	0.33	83.00	2.75	0.46
5	Black	14	16.29	1.43	1.36	2.79	0.49	73.00	4.71	0.53
5	White	40	19.38	0.63	0.92	1.55	0.60	85.50	2.52	0.68
5	Other	7	19.57	2.43	0.57	3.00	0.19	86.14	3.71	0.23
6	.	15	14.27	0.67	1.00	1.67	0.60	64.13	3.67	0.75
6	Black	27	14.48	1.41	1.41	2.81	0.50	65.89	5.26	0.54
6	White	42	17.29	0.98	1.69	2.67	0.63	77.07	4.95	0.62
6	Other	8	15.88	1.13	1.75	2.88	0.61	71.50	5.88	0.72
7	.	20	13.20	0.70	1.85	2.55	0.73	60.05	5.50	0.80
7	Black	68	12.60	1.49	1.78	3.26	0.55	57.96	7.28	0.62
7	White	47	13.68	1.45	2.45	3.89	0.63	62.57	8.36	0.65
7	Other	17	13.47	1.18	1.59	2.76	0.57	61.88	5.35	0.64
8	.	32	11.19	0.81	2.28	3.09	0.74	51.34	6.69	0.81
8	Black	74	10.31	1.28	1.61	2.89	0.56	48.27	6.46	0.61
8	White	72	10.75	1.11	2.08	3.19	0.65	49.90	6.50	0.68
8	Other	14	10.43	0.86	1.93	2.79	0.69	48.50	5.64	0.76
9	.	18	9.50	1.00	2.39	3.39	0.71	44.22	5.72	0.77
9	Black	65	7.55	0.92	1.71	2.63	0.65	35.37	5.98	0.73
9	White	78	9.13	0.68	2.09	2.77	0.76	42.58	5.72	0.78
9	Other	15	7.87	1.47	2.07	3.53	0.59	36.80	7.33	0.61

Table 1.4 (cont'd)

Deciduous Teeth -- Means by Race

Age	Race	N	Teeth	DT	FT	DFT	FT/DFT	Surfaces	DFS	FS/DFS
10	.	17	6.24	0.41	1.29	1.71	0.76	29.41	3.18	0.80
10	Black	70	4.59	0.57	1.19	1.76	0.68	21.56	3.31	0.71
10	White	68	5.56	0.44	1.91	2.35	0.81	26.01	5.59	0.81
10	Other	20	4.10	0.75	1.65	2.40	0.69	19.25	6.05	0.69
11	.	17	2.88	0.24	0.88	1.12	0.79	13.94	2.35	0.88
11	Black	43	1.70	0.12	0.70	0.81	0.86	8.02	1.65	0.90
11	White	56	2.64	0.21	0.73	0.95	0.77	12.57	2.14	0.88
11	Other	11	0.73	0.00	0.45	0.45	1.00	3.45	1.82	1.00
12	.	16	1.88	0.25	0.06	0.31	0.20	8.94	0.69	0.18
12	Black	65	0.62	0.15	0.18	0.34	0.55	2.98	0.74	0.63
12	White	72	1.06	0.13	0.24	0.36	0.65	5.00	0.74	0.68
12	Other	12	0.67	0.17	0.00	0.17	0.00	3.17	0.25	0.00

. Unknown

Figure 1.11 Plot of Decayed and Filled Surfaces by Age and Race
(Deciduous Teeth)

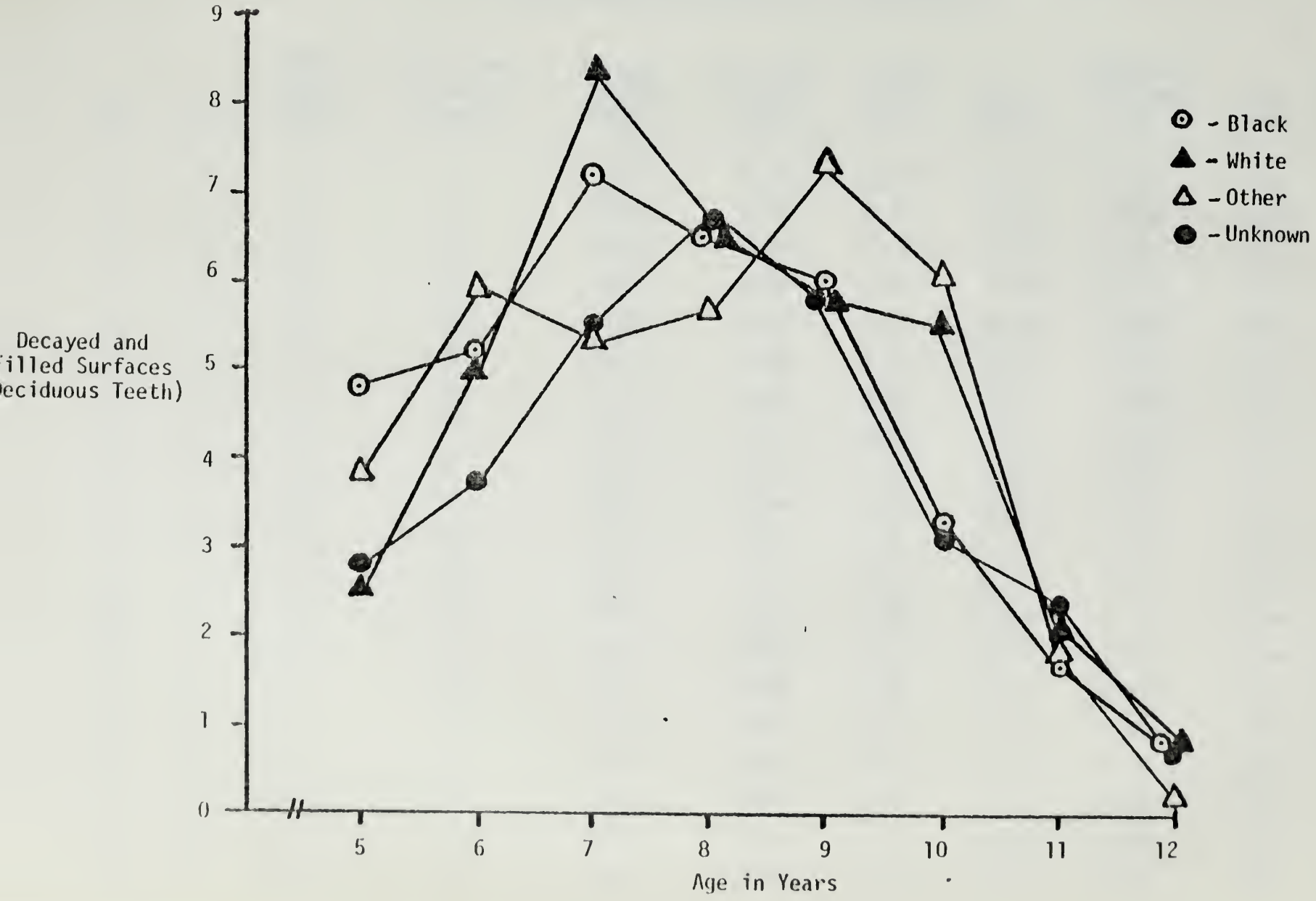


Table 1.5

Summary of Decayed, Missing and Filled Permanent Teeth per Child, with Standard Deviations, by Age and Sex

Age	Sex	Number of Cases	No Evidence of Disease	Decayed Teeth/ Child	Missing Teeth/ Child	Filled Teeth/ Child	DMFT/ Child	Standard Deviations DMFT	DFS/ Child	Standard Deviations DFS
4	M	3	2	0.00	0.33	0.00	0.33	0.58	0.00	0.00
4	F	3	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	M	35	34	0.00	0.00	0.03	0.03	0.17	0.03	0.17
5	F	38	34	0.24	0.00	0.05	0.29	0.90	0.42	1.31
6	M	49	40	0.20	0.00	0.12	0.33	0.83	0.41	1.17
6	F	43	33	0.21	0.00	0.16	0.37	0.76	0.53	1.20
7	M	77	44	0.64	0.00	0.26	0.90	1.26	1.14	1.74
7	F	75	38	0.49	0.00	0.56	1.05	1.37	1.45	2.06
8	M	93	45	0.45	0.01	0.73	1.19	1.47	1.63	2.30
8	F	99	37	1.07	0.00	0.74	1.81	1.82	2.79	3.53
9	M	82	22	0.71	0.02	1.51	2.24	1.91	3.40	3.05
9	F	94	23	0.81	0.07	1.43	2.31	1.72	3.18	2.69
10	M	90	15	0.83	0.02	1.98	2.83	1.78	4.74	3.68
10	F	85	9	1.18	0.11	2.36	3.65	2.71	5.58	4.32
11	M	63	12	1.05	0.08	2.03	3.16	2.29	5.37	4.90
11	F	64	5	1.34	0.28	3.11	4.73	2.95	7.72	5.65
12	M	83	12	1.60	0.13	2.27	4.00	3.08	6.40	5.24
12	F	82	4	1.45	0.12	3.56	5.13	3.00	8.20	5.06
13	M	83	6	1.57	0.14	4.11	5.82	3.80	9.72	7.50
13	F	88	3	1.93	0.20	4.09	6.23	4.19	9.91	8.67

Table 1.5 (cont'd)

Summary of Decayed, Missing and Filled Permanent Teeth per Child, with Standard Deviations, by Age and Sex

Age	Sex	Number of Cases	No Evidence of Disease	Decayed Teeth/ Child	Missing Teeth/ Child	Filled Teeth/ Child	DMFT/ Child	Standard Deviations DMFT	DFS/ Child	Standard Deviations DFS
14	M	80	3	1.72	0.35	4.54	6.61	4.18	10.09	6.78
14	F	73	8	1.92	0.33	4.74	6.99	4.52	11.75	8.75
15	M	82	7	1.66	0.46	5.20	7.32	4.71	12.38	9.63
15	F	102	3	1.40	0.48	7.75	9.63	4.30	15.52	10.22
16	M	72	5	1.33	0.46	6.22	8.01	4.80	12.24	8.92
16	F	87	1	1.77	0.55	8.13	10.45	4.81	17.51	11.35
17	M	64	0	1.81	0.81	8.25	10.88	4.66	18.84	10.59
17	F	54	2	1.46	0.91	8.04	10.41	4.93	16.46	9.20
18	M	15	0	2.67	1.53	7.60	11.80	4.31	17.27	7.45
18	F	12	0	2.58	0.58	6.17	9.33	4.60	15.17	8.11
19	M	3	0	3.67	0.67	6.33	10.67	8.51	15.33	14.05
20	M	1	0	2.00	4.00	2.00	8.00	.	4.00	.
20	F	1	0	9.00	6.00	1.00	16.00	.	21.00	.
21	M	1	1	0.00	0.00	0.00	0.00	.	0.00	.

. Not able to calculate

Table 1.6

Summary of Decayed and Filled Deciduous Teeth per Child, with Standard Deviations by Age and Sex

Age	Sex	N	Decayed Teeth/child	Filled Teeth/child	dft/child	Standard Deviations dft
4	M	3	0.00	1.67	1.67	2.08
4	F	3	2.67	0.67	3.33	3.06
5	M	35	1.03	1.00	2.03	2.27
5	F	38	1.11	0.87	1.97	2.48
6	M	49	1.02	1.82	2.84	2.94
6	F	43	1.12	1.14	2.29	3.13
7	M	77	1.09	1.56	2.65	2.78
7	F	75	1.59	2.40	3.99	3.54
8	M	93	1.11	2.30	3.41	3.02
8	F	99	1.11	1.57	2.68	2.44
9	M	82	1.04	2.16	3.20	2.57
9	F	94	0.72	1.82	2.54	2.50
10	M	90	0.73	1.96	2.69	2.52
10	F	85	0.31	1.08	1.39	2.04
11	M	63	0.27	0.84	1.11	1.58
11	F	64	0.06	0.59	0.66	1.44
12	M	83	0.25	0.23	0.48	1.09
12	F	82	0.05	0.13	0.18	0.57

Figure 1.12 Distribution of Permanent Decayed, Missing and Filled Teeth

Boston Total N = 1976

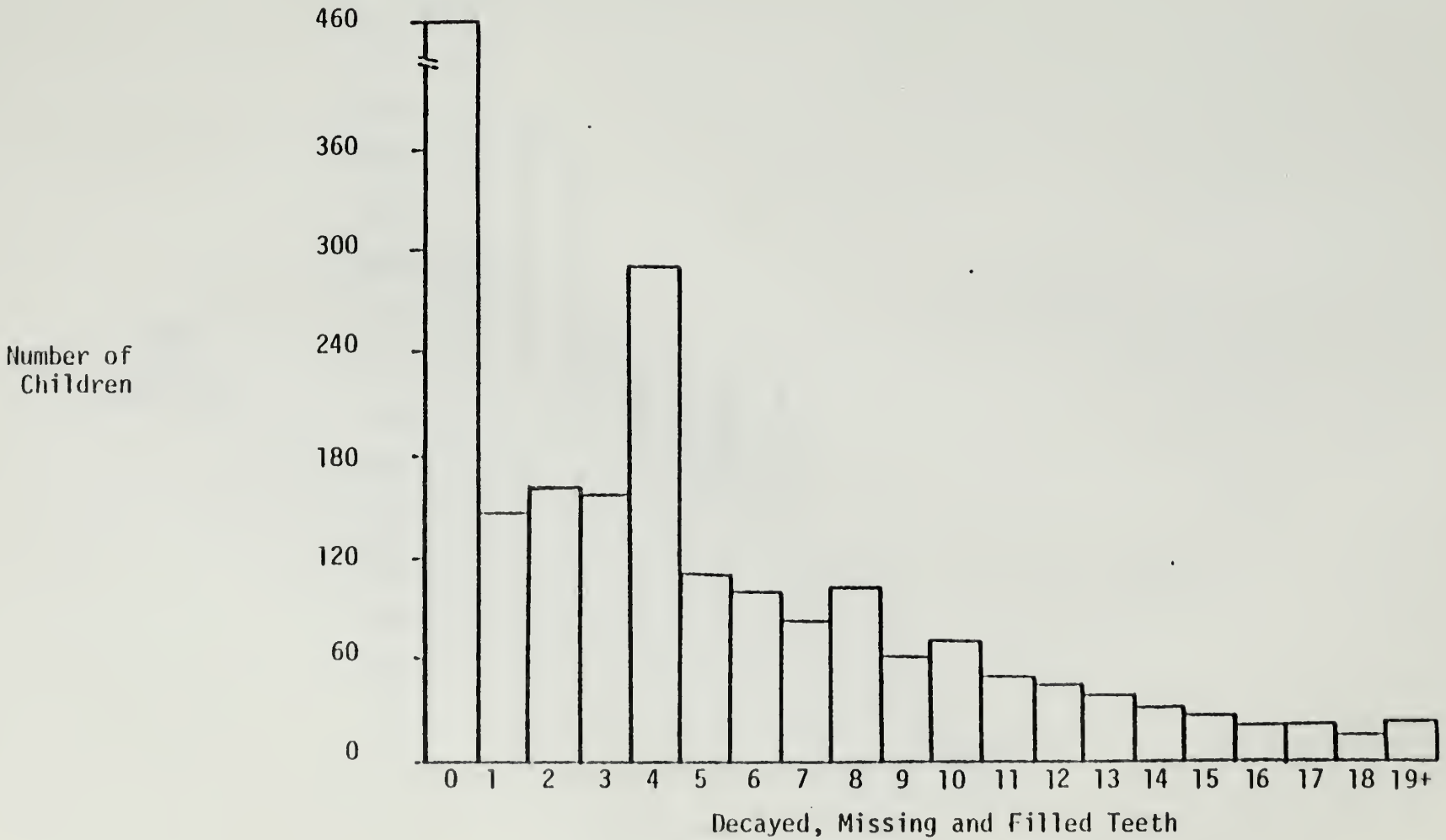
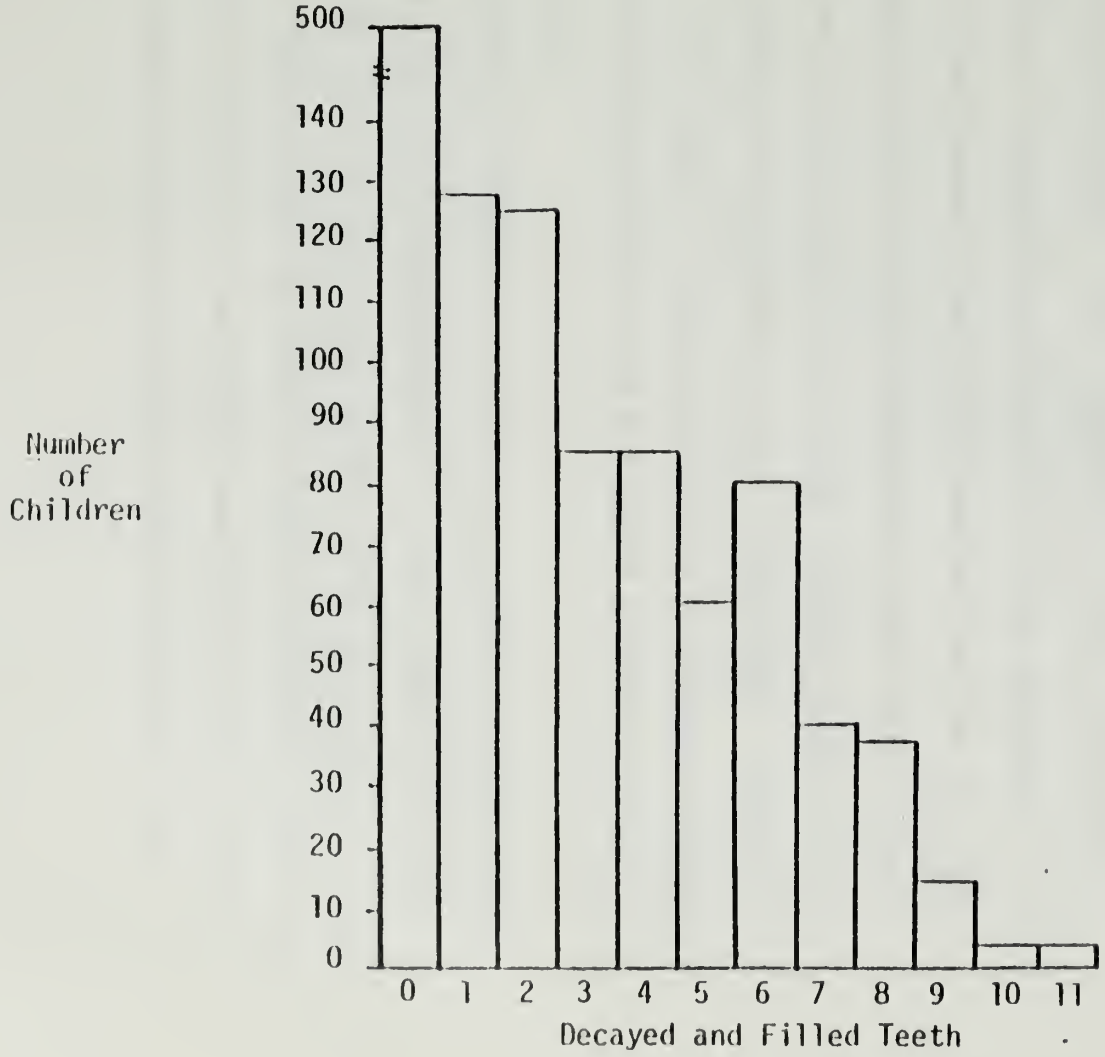


Figure 1.13 Distribution of Deciduous Decayed and Filled Teeth

Boston Ages 4-12

N = 1158

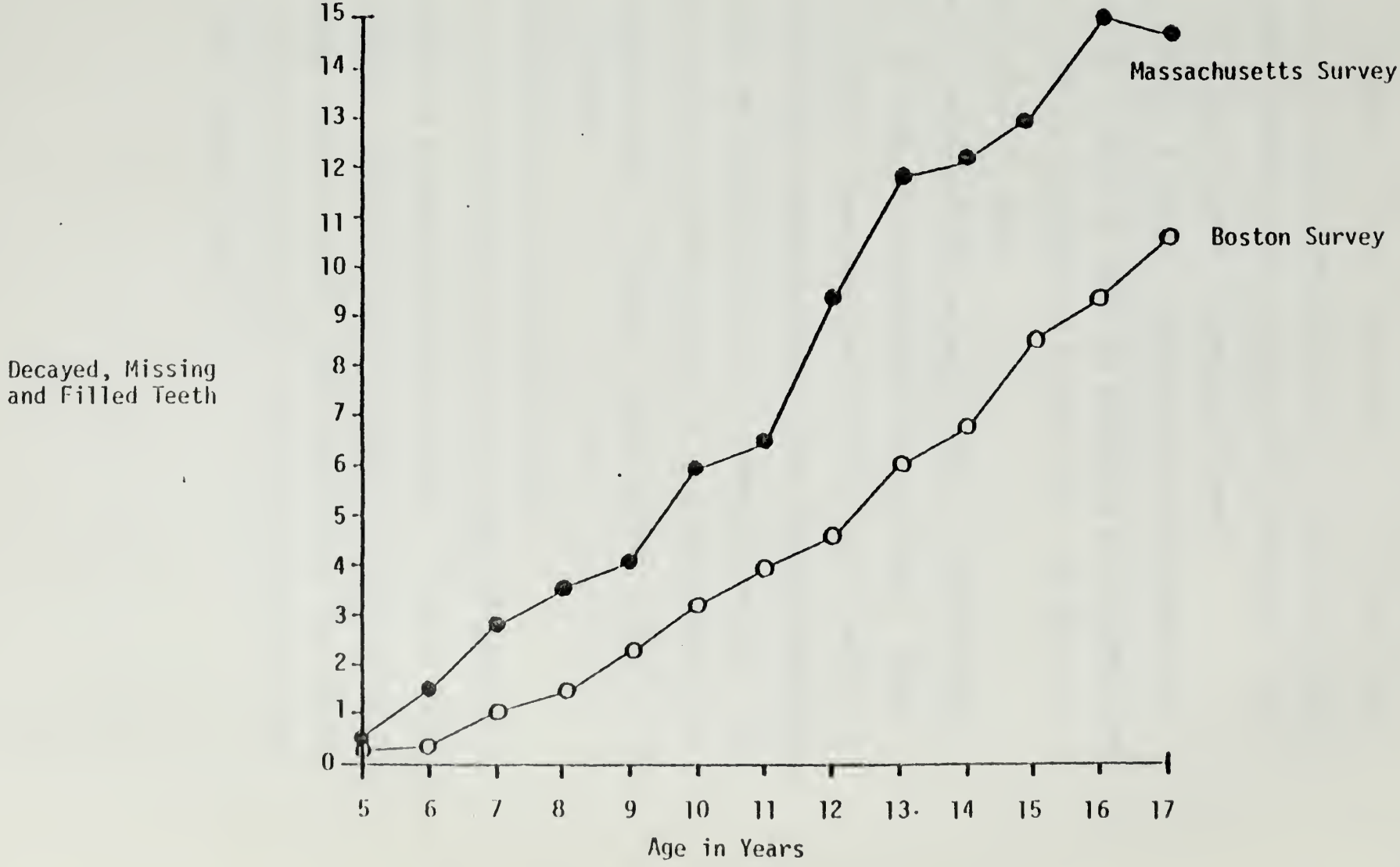


Again, there are a large number with zero dft. In this case it is due to the older-age children who have few deciduous teeth at risk for decay: 6.6 percent of 11 year olds and 80 percent of 12 year olds had a zero dft.

It is of interest to compare the results of this study with those reported by Wellock in 1950-51 for Massachusetts children. Figure 1.14 shows the age-specific values obtained in the Massachusetts survey and the corresponding values (unweighted average of males and females) observed in Boston. It is immediately obvious that the current data reflect a distinctly lower level of caries experience. Age-specific DMFT values generally were 30-50 percent lower in the 1979 findings. Data obtained in the MDC communities reveal even a lower caries rate, and the last phase of the study will make possible a definitive evaluation of the trends of caries in the state. However, it is quite clear that there is reason to believe that caries in Massachusetts may be declining and that there has been a definite decrease over the past 30 years.

The FT/DMFT and FS/DFS ratio reflect the extent to which needed restorative services are being obtained. By eight years of age, the ratio is in excess of 0.5 and climbs steadily to 0.85 at age 17. Thus, in the older children, about 85 percent of their restorative needs have been met. This is quite high, especially when compared with Wellock's study, which found only 28 percent of the needed restorative work

Figure 1.14 Plot of Decayed, Missing and Filled Teeth by Age: Comparison of Boston Survey to Massachusetts Survey of 1951-2



completed in 17 year olds. This is also surprising in light of the fact that Boston's children are generally not in a high socio-economic level. It appears, therefore, that access to and utilization of dental care facilities have improved in the past 30 years.

Tables 1.7 and 1.8 warrant comparison with their counterparts, Tables 1.5 and 1.6, in order to gauge the components and the magnitude of the change in the caries picture of 30 years ago. The 1951 data is taken from Wellock's final report.

The past 30 years have seen so many advances in dentistry that it is difficult to single out one major contributing factor. Beside advances in fluoridation, there have been increases in the number and type of dental personnel, improved access to care, increased knowledge of dental disease, and increased interest in preventive measures. Comparison between Wellock's data and the data in this report gives testimony to the changing patterns of dental disease, perhaps resulting from the factors just noted.

2. Findings Relative to Caries-Free Children

It is of particular interest to look at the data for those children who were found to be completely free of decayed, filled, or missing -due-to caries teeth. The total number of children who were caries-free in their permanent dentition was 451, which translates to 22.8 percent of the total population of 1976 children. Males were caries-free more often (25.4%) than females (20.3%).

Table 1.7

Average Number of Decayed, Missing and Filled Permanent Teeth per Child by Age in Twenty-eight Representative Massachusetts Communities, 1951

Age	Number of Cases	No Evidence of Disease	Decayed Teeth Per Child	Missing Teeth Per Child	Filled Teeth Per Child	DMF Teeth Per Child	σ obs
5	344	301	0.26	0.00	0.00	0.26	--
6	1293	609	1.37	0.00	0.06	1.43	1.60
7	1470	298	2.24	0.01	0.28	2.53	1.63
8	1458	99	2.83	0.04	0.62	3.49	1.70
9	1234	62	3.11	0.10	0.91	4.12	2.18
10	1069	38	3.71	0.13	1.19	5.03	2.95
11	1049	29	4.81	0.23	1.79	6.83	4.36
12	1326	29	5.57	0.40	2.65	8.62	4.92
13	1328	11	6.49	0.62	3.36	10.47	5.26
14	1083	5	7.07	0.89	4.34	12.30	5.42
15	916	6	7.48	1.41	4.94	13.83	5.56
16	736	1	6.96	1.71	6.12	14.79	5.65
17	473	0	6.80	1.80	6.63	15.23	5.30
18	196	0	6.51	2.49	7.59	16.59	5.55
19	27	0	7.04	4.59	6.44	18.07	5.66
20	1	0	1.00	0.00	12.00	13.00	--

Table 1.8

Average Number of Decayed and Filled Deciduous Teeth per Child by Age in Twenty-eight Representative Massachusetts Communities, 1951

Age	Number of Cases	Number of Decayed Teeth Per Child	Number of Filled Teeth Per Child	Number of df Teeth Per Child
3	258	4.53	.06	4.59
4	311	4.82	.24	5.06
5	406	5.67	.47	6.14
6	1232	4.86	.74	5.60
7	1399	4.40	.96	5.36
8	1379	4.09	.95	5.04
9	976	3.45	.87	4.32
10	900	2.38	.52	2.90
11	862	1.17	.27	1.44
12	1047	.41	.09	.50

A chi-square test for significance shows this difference to be highly significant at the 0.01 level. This is consistent, again, with published data on the higher rate of caries in females. This information is shown in Figure 2.1 by age categories. Note that the percentages by age are quite low. For example, at age seven, 4.5 percent of males were caries-free; or in another case, at age eleven, 0.5 percent of females were caries-free. In the younger age groups, the percentages are much higher, but this is a reflection of the fact that there are fewer permanent teeth at risk, rather than an absolute statement of lowered caries rate. It is also interesting to note that the lower caries rate among males is a constant phenomenon in nearly all age groups.

Table 2.1 shows how the 451 caries-free (permanent dentition) children are distributed by age and sex and how they relate to the total population. Again, there is a decrease in caries-free children with increasing age, demonstrating the increase in caries experience with age in childhood.

Table 2.2 gives the information about caries free subsets in relation to race. Blacks and whites are the two racial groups with meaningful sample sizes and it is evident that the percentage of caries-free children in each of these groups is not markedly different. Note the substantial number of children with race unknown signalling the need for caution in interpreting the race data.

Figure 2.1 Percentage of Males and Females at Each Age with Caries-Free Permanent Dentition

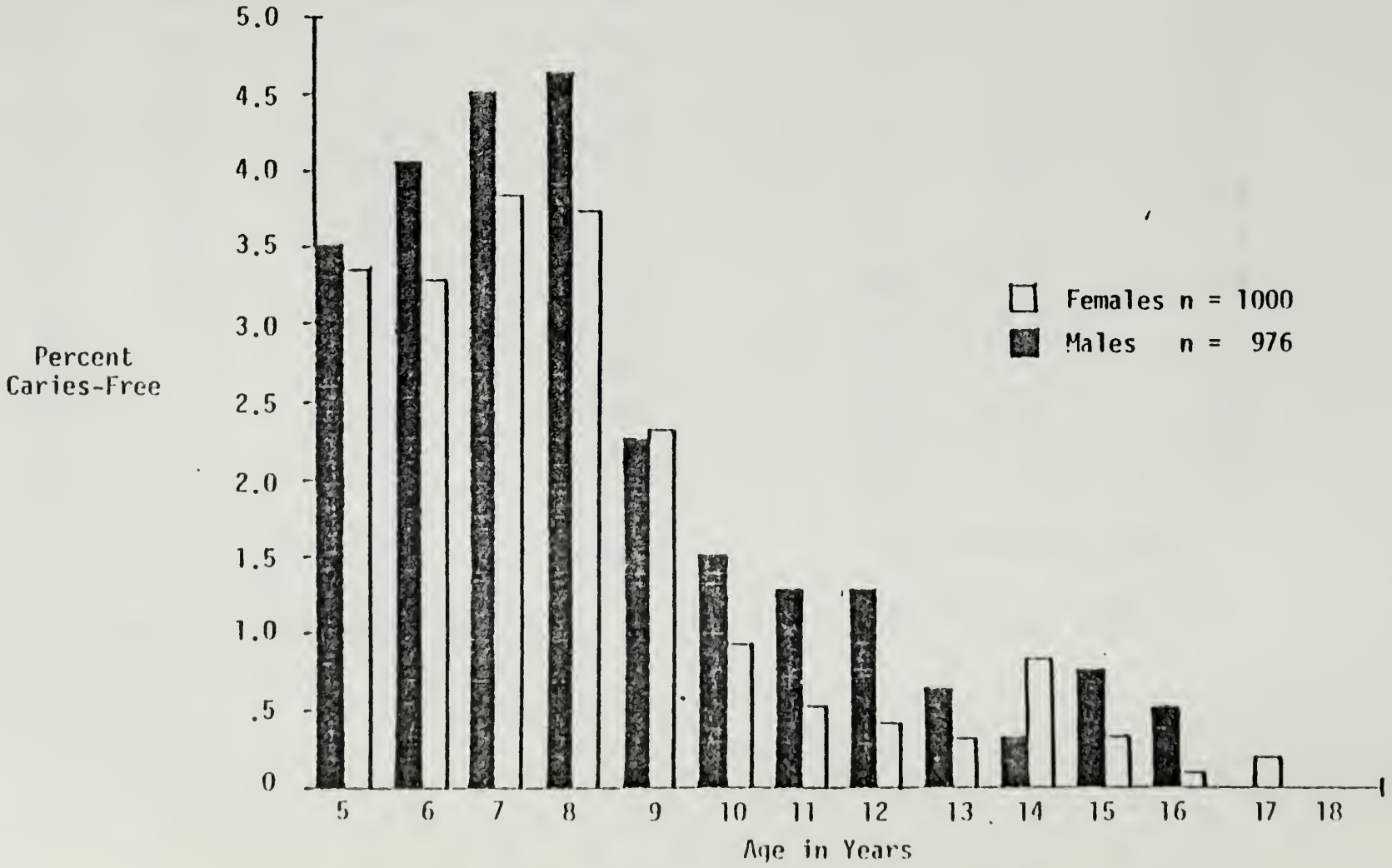


Table 2.1

Children with Caries Free (CF) Permanent Dentition, Ages 5-17

Males n = 976				Females n = 1000			
Age	No. CF	% of Age-Group CF	% of Total Population (M)	Age	No. CF	% of Age-Group CF	% of Total Population (F)
5	34	97.1	3.5	5	34	89.5	3.4
6	40	81.6	4.1	6	33	76.4	3.3
7	44	57.1	4.5	7	38	50.7	3.8
8	45	48.4	4.6	8	37	37.4	3.7
9	22	26.8	2.3	9	23	24.5	2.3
10	15	16.7	1.5	10	9	10.6	0.9
11	12	19.1	1.2	11	5	7.8	0.5
12	12	14.5	1.2	12	4	4.9	0.4
13	6	7.2	0.6	13	3	3.4	0.3
14	3	3.8	0.3	14	8	11.0	0.8
15	7	8.5	0.7	15	3	2.9	0.3
16	5	6.9	0.5	16	1	1.2	0.1
17	0	0	0	17	2	3.7	0.2
Total CF Males (5-17) = 248			25.4%	Total CF Females = 203			20.3%
*3 CF Males under age 5 or over 17				*3 CF Females under age 5			

Table 2.2

The 451 Caries-Free Children (Permanent Dentition) by Race

	Black	White	Other	Race Unknown
# Caries Free	142	184	47	76
% Caries Free of Each Race	20.76	22.66	30.72	24.68
% Caries Free of Total Sample N = 1976	7.19	9.21	2.26	3.85

The data on deciduous teeth are given in Table 2.3. As the numbers of deciduous teeth decrease with increasing age, the surfaces available for study decrease, so that the probability of a caries free deciduous dentition increases. This is more marked among the females who tend to lose their deciduous teeth earlier. There are a substantial number of 5, 6 and 7 year olds who have a dentition unmarred by decay or its repair.

3. OHI, GI, Orthodontic and Trauma Findings

Table 3.1 contains a summary of the basic findings in the four categories of interest for 1000 females and 976 males between the ages of 4 and 21. Ages 4, and 18 to 21 are very few in number and cannot be representative of their age group.

The Simplified Oral Hygiene Index has already been described. The possible scores for those who could be examined were 0, 1, 2, 3. A score of 3 meant that the entire surface of the tooth was covered with debris. Six teeth were examined on one surface each. The total score per child was divided by 6 to obtain the mean. Table 3.1 shows that the mean scores tend to rise slowly with age, reaching a peak at ages 10-13 and slowly dropping after that. Tables 3.2 and 3.3 show higher mean scores for blacks than for whites, and slightly higher for males than females. The average score for ages 6-11 (0.91) was slightly higher than for ages 12-17 (0.88). The HANES findings also shown in these tables are discussed below.

Table 2.3

Children with Caries Free (CF) Deciduous Dentition, Ages 4-10

Males n = 429				Females n = 437			
Age	No. CF	% of Age-Group CF	% Total CF 4-10 y.o (M)	Age	No. CF	% of Age-Group CF	% Total CF 4-10 y.o (F)
4	1	33.3	.23	4	1	33.3	.23
5	14	40.0	3.26	5	16	42.1	3.66
6	18	36.7	4.20	6	20	46.5	4.58
7	28	36.4	6.53	7	18	24.0	4.12
8	27	29.0	6.29	8	30	30.3	6.87
9	17	20.7	3.96	9	27	28.7	6.18
10	26	28.9	6.06	10	50	58.8	11.44
Total CF Males (4-10) = 131			30.5%	Total CF Females (4-10) = 162			37.1%

Table 3.1

Preliminary Results by Age

AGE	OH AVG			GI AVG			TRAUMA INDEX			OCCLUSAL PROBLEMS			
	N (M&F)	N Missing	Mean Score	N (M&F)	N Missing	Mean Score	Sex	0	1-3	Overjet	Overbite	Class III	Crowding
4	2	4	0.5	0	6	-	M	3	0	0	0	0	0
							F	3	0	0	0	0	0
5	32	41	0.42	0	73	-	M	34	1	0	0	0	0
							F	38	0	1	0	0	0
6	46	46	0.64	0	91	-	M	49	0	1	0	0	1
							F	43	0	2	1	0	0
7	104	48	0.82	0	152	-	M	77	0	2	1	1	3
							F	75	0	5	3	1	1
8	167	25	0.83	6	186	0.62	M	90	3	9	5	0	4
							F	99	0	5	4	1	3
9	164	12	0.86	24	152	0.57	M	78	4	8	5	0	3
							F	92	2	7	5	0	1
10	171	4	1.00	79	96	0.68	M	85	5	11	2	1	6
							F	80	5	11	5	1	2
11	127	0	0.93	101	26	0.67	M	58	5	7	7	1	6
							F	63	1	6	4	1	2
12	164	1	0.92	153	12	0.68	M	78	5	13	6	0	3
							F	76	6	7	4	2	4
13	168	3	0.98	165	6	0.75	M	68	15	8	5	2	5
							F	81	7	11	8	1	6
14	149	4	0.79	149	4	0.62	M	76	4	5	6	3	4
							F	68	5	8	6	1	6

Table 3.1 (cont'd)

Preliminary Results by Age

AGE	OH AVG			GI AVG			TRAUMA INDEX			OCCLUSAL PROBLEMS			
	N (M&F)	N Missing	Mean Score	N (M&F)	N Missing	Mean Score	Sex	0	1-3	Overjet	Overbite	Class III	Crowding
15	182	2	0.86	177	7	0.65	M	71	11	8	6	0	4
							F	96	6	14	4	0	4
16	155	4	0.86	155	4	0.71	M	66	6	5	5	1	2
							F	83	4	5	5	3	6
17	116	2	0.85	115	3	0.61	M	53	11	4	0	1	7
							F	51	3	6	4	0	4
18	27	0	0.96	27	0	0.84	M	11	4	1	0	1	2
							F	12	0	0	1	0	0
19	3	0	1.17	3	0	0.60	M	2	1	0	0	1	0
							F	0	0	0	0	0	0
20	1	1	0.33	1	1	0.17	M	1	0	0	0	0	0
							F	1	0	0	0	0	0
21	1	0	2.00	1	0	1.79	M	1	0	0	0	0	0
							F	0	0	0	0	0	0

Table 3.2

Comparison of Boston and HANES Study
Mean Scores (Standard Errors of Mean)

AGES 6 - 11

Index	*n=416 males BOSTON 419 females					*n=1000 males HANES 1018 females				
	Total	Male		Female		Total	Male		Female	
		white	black	white	black		white	black	white	black
OHI-S	0.91(0.02)	0.88 (0.04)	0.95 (0.06)	0.76 (0.04)	1.02 (0.06)	0.75(0.03)	0.78 (0.04)	0.9 (0.06)	0.66 (0.03)	0.86 (0.05)
GIAVG (PI for HANES)	0.66(0.04)	0.76 (0.08)	0.64 (0.08)	0.70 (0.08)	0.67 (0.08)	0.11(0.09)	0.14 (0.02)	0.15 (0.04)	0.08 (0.01)	0.10 (0.03)
ORTHO NEED	16.9%	18.5%		15.4%		6.4%	6.4%		6.4%	

* n adjusted by eliminated ages below 6

Table 3.3

Comparison of Boston and HANES Study
Mean Scores (Standard Errors of Mean)

AGES 12 - 17

Index	BOSTON * n=446 males 473 females					HANES * n=1068 males 1064 females				
	Total	Male		Female		Total	Male		Female	
		white	black	white	black		white	black	white	black
OHI-S	0.88(0.02)	0.83 (0.04)	1.03 (0.04)	0.86 (0.03)	0.89 (0.04)	0.89(0.04)	0.92 (0.04)	1.43 (0.11)	0.66 (0.33)	0.86 (0.05)
GIAVG (PI for HANES)	0.68(0.02)	0.67 (0.04)	0.76 (0.04)	0.74 (0.04)	0.70 (0.04)	0.32(0.02)	0.35 (0.03)	0.58 (0.08)	0.22 (0.03)	0.47 (0.07)
ORTHO NEED	23.4%	22.2%		24.5%		7.1%	7.9%		6.2%	

* n adjusted by eliminating ages over 17

The gingival index ranged from 0 to 3, indicating the spectrum from no inflammation to severe inflammation. The percentages of children eligible for this examination were 42.55 percent males and 39.4 percent females with the remainder not having the necessary dentition for this examination. Table 3.1 indicates that there is a general rise of the mean score with age. Very few of those examined had no inflammation (2.15 percent of males and 3.2 percent of females). The majority had at least one area of mild (1) or moderate (2) inflammation. A very small percent presented with an area of severe inflammation (1.23 percent of males and 0.5 percent of females). In all cases except males, aged 12-17, blacks had better scores than whites. This may be due to the difficulty of the visual detection of inflammation in highly pigmented gingivae. Generalization for male and female differences cannot be easily drawn, although Figures 3.1 and 3.2 show a higher percentage of females with scores of 0, 1, 2 and a lower percentage with a score of 3.

The results of Orthodontic Need Index summarized are in Tables 3.1 and 3.4. The most common occlusal disturbance was overjet, with overbite and crowding as close seconds. Class III malocclusions were relatively uncommon. Females had a slightly higher incidence of overjet and overbite while males had more cases of Class III and crowding.

The trauma index applies almost exclusively to anterior teeth. As might be expected, males had a higher incidence of trauma than

Figure 3.1

Gingival Inflammation Index

Percent Distribution of Total Population in Each Category

Males n = 976

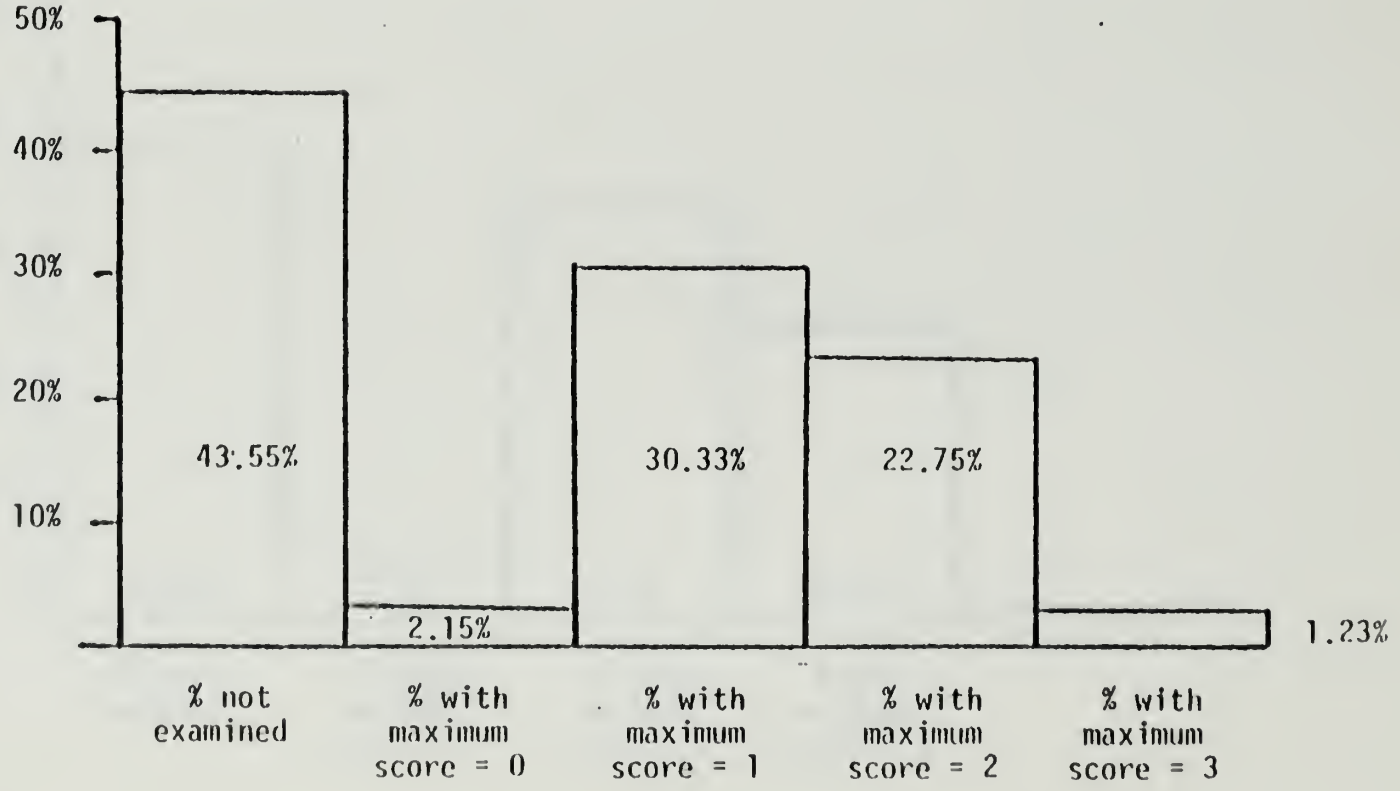


Figure 3.2

Gingival Inflammation Index

Percent Distribution of Total Population in Each Category

Females n = 1000

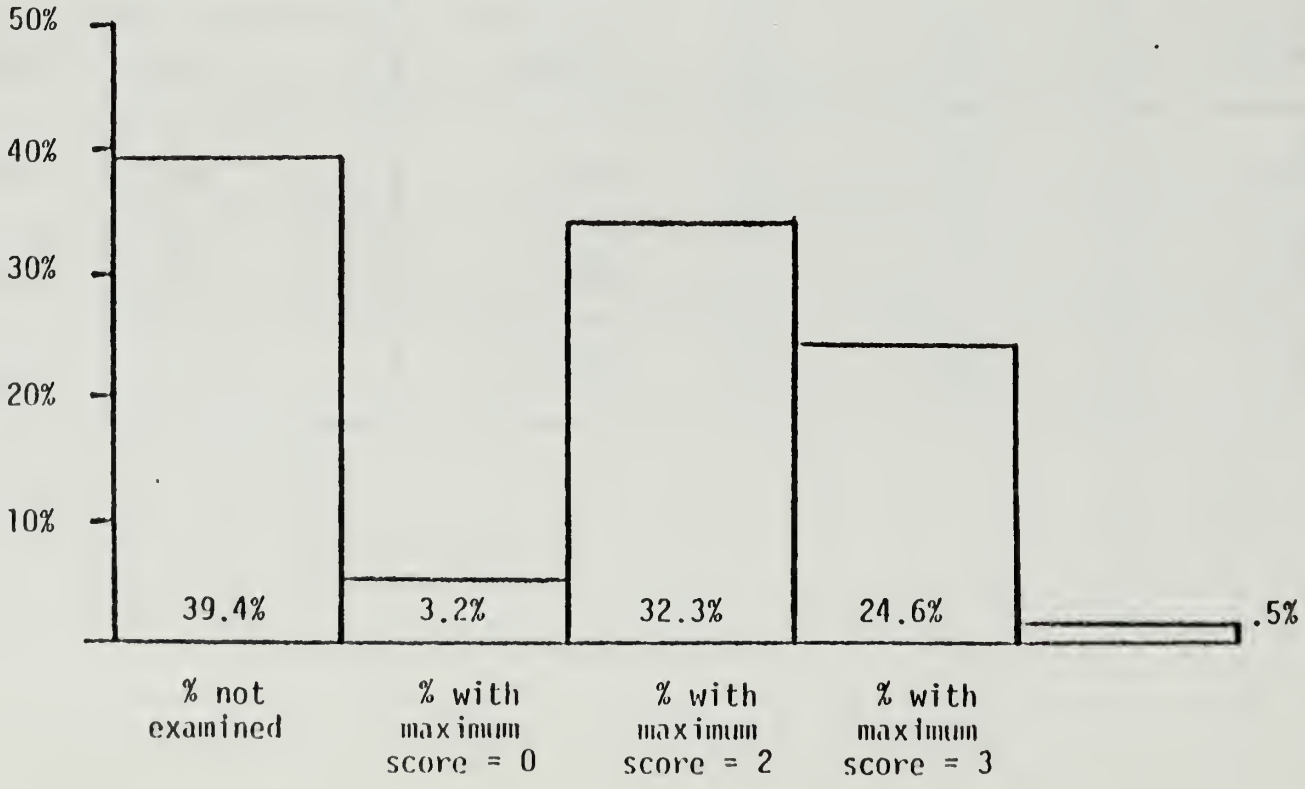


Table 3.4

Percent of Population (ages 4-20) with Orthodontic Need
Classified by Sex and Type of Malocclusion

N = 976 males
1000 females

	Males		Females	
	frequency	percent	frequency	percent
1. overjet	82	8.4%	88	8.8%
2. overbite	48	4.9%	54	5.4%
3. class III	12	1.23%	11	1.1%
4. crowding	50	5.12%	39	3.9%

females, and for both groups, trauma was seen most often in the adolescent years. Trauma was recorded whether it had been repaired or not, so that this is not an indication of treatment need. Trauma was actually quite uncommon since 92.32 percent of males and 96.10 percent of females exhibited no indications of it. These findings are summarized in Figures 3.3 and 3.4, and in Table 3.5.

There are no comprehensive studies of the factors described here that have been previously done in Boston. However, a nationwide study from 1971-75, the Health and Nutrition Examination Survey (HANES) can serve as a point of comparison as has been shown in Tables 3.2 and 3.3. The same oral hygiene index was used in both studies, and it can be seen that there are some similar trends. Blacks had higher mean scores than whites, and males were higher than females, enhancing the credibility of our data. The mean scores for each group were generally higher in the Boston study; this may reflect the fact that our group was a more homogeneous group (all living in a major city) than the HANES group.

The HANES study used the average Periodontal Index of Russel which scores from 0-2 for gingival inflammation and 6-8 for pocket formation. Due to the different indices employed, direct comparison of the Boston and HANES data is not possible.

Although we have no previous data on Boston children in terms of oral hygiene and periodontal status, the results of this study indicate

Figure 3.3

Frequency of Males and Females with Trauma to the Anterior Teeth at Each Age

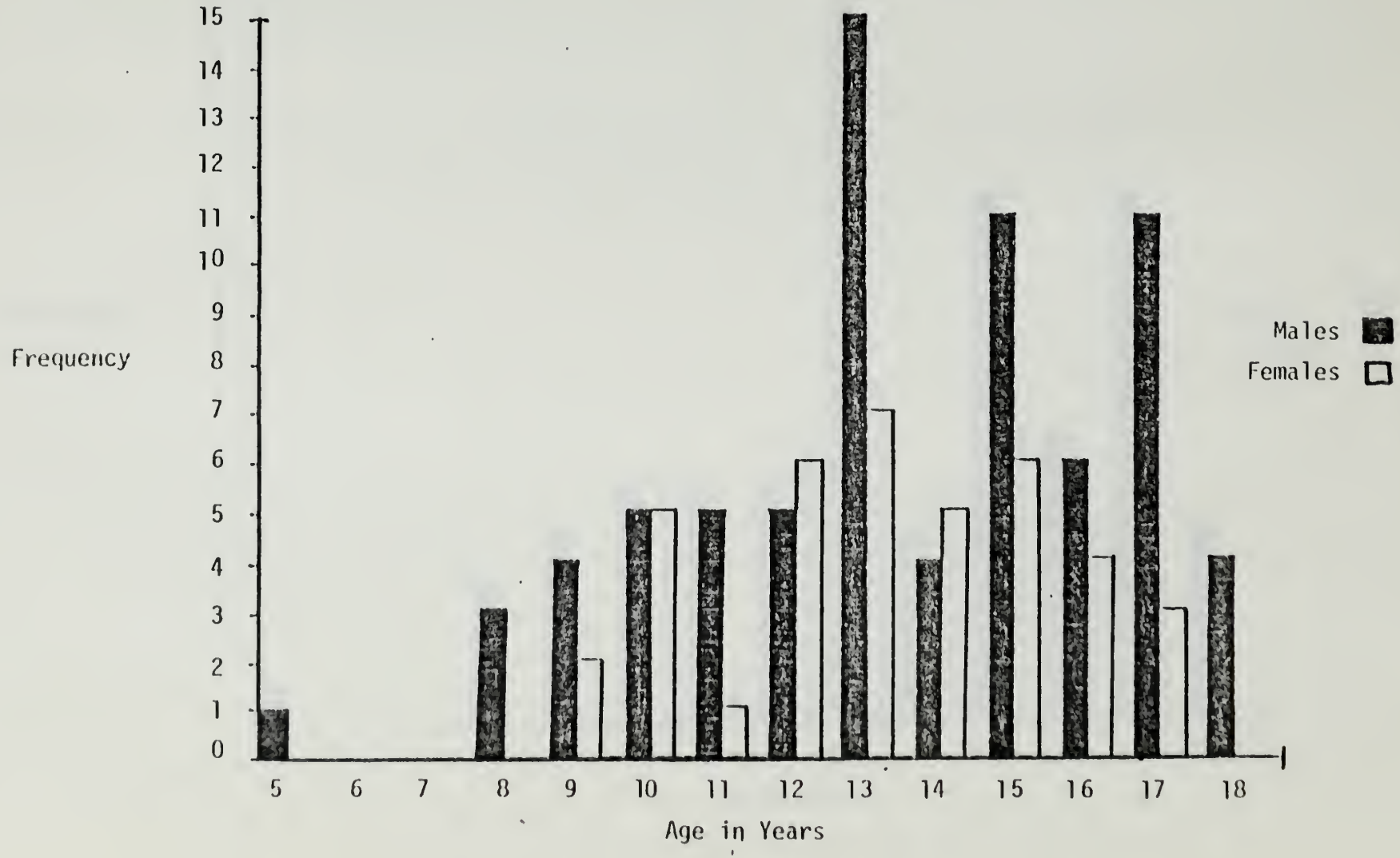


Figure 3.4

Percentage of Males and Females with Trauma to the Anterior Teeth at Each Age

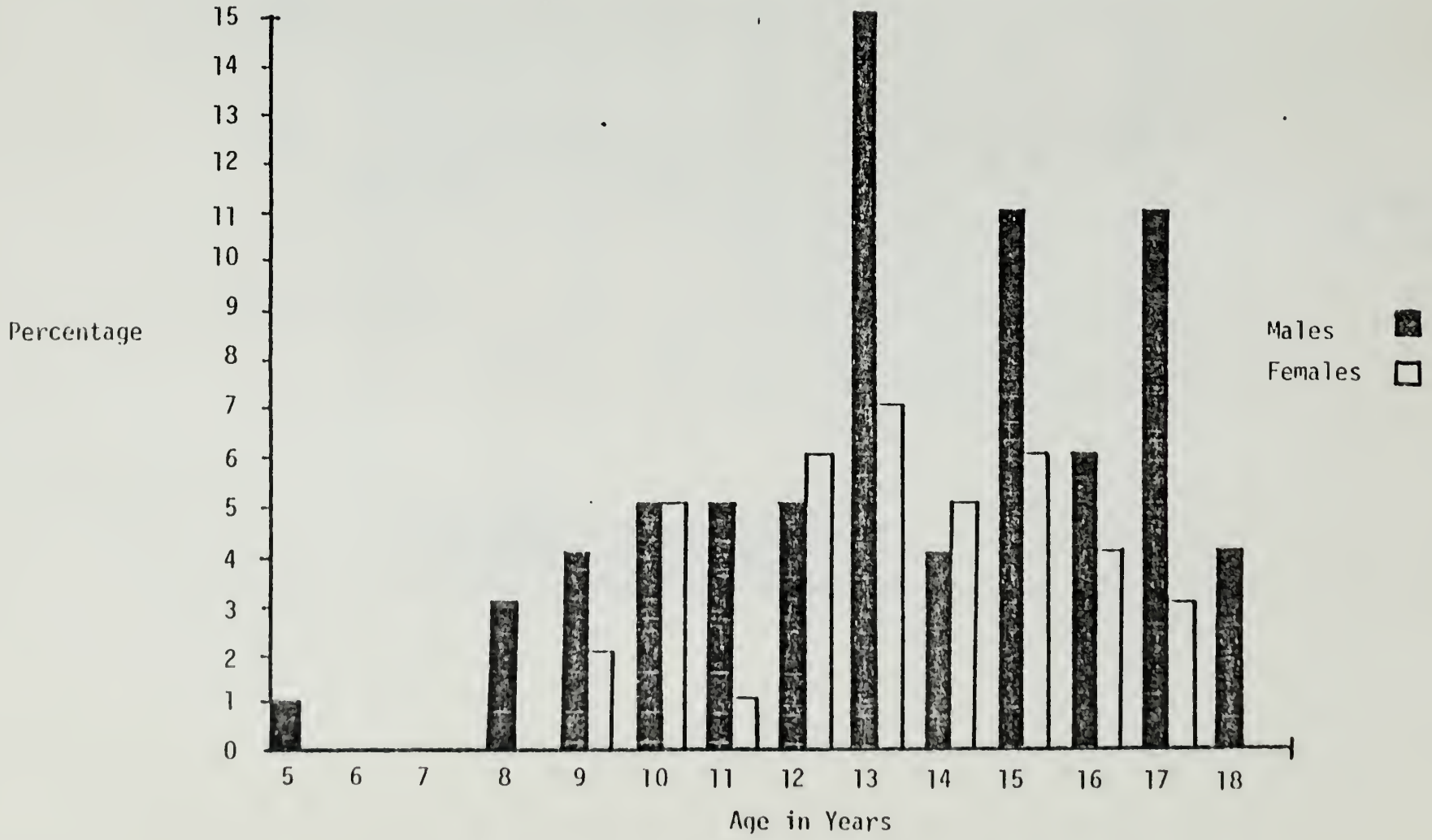


Table 3.5

Distribution of Trauma by Classification for Males and Females

SEX		SCORES * 0	1	2	3
male	no.	901	38	16	21
	%	92.32	3.89	1.64	2.15
female	no.	961	9	16	14
	%	96.10	0.90	1.60	1.40

N = 976 Males
1000 Females

* 0 = no trauma
1 = fracture of incisal 1/3 of tooth
2 = fracture of 2/3 of crown
3 = fracture of more than 2/3 of crown

that improvement is needed. While the caries experience in Massachusetts may be declining, emphasis may need to shift to more prevention-oriented periodontal and gingival treatment.

The orthodontic needs are quite high for Boston children. Perhaps some children who had been examined were scheduled for future treatment while others may be faced with financial barriers in obtaining treatment. At any rate, the findings do indicate a need for greater awareness of the orthodontic problems of Boston children.

The trauma category has already been discussed. The percentage of children in this group was very small, and there are no statistics in HANES with which we can compare them. Ellis and Davey reported 4.2 percent of 4251 school children had fractured teeth. This is very close to our overall figures of 5.8 percent of all children examined.

Mail Survey Findings

The final response rate for the combined mail and telephone survey was 63 percent, which is generally considered satisfactory for this type of polling effort in a community as large as the City of Boston. The overwhelming majority of respondents were mothers (83%), although this number dropped to 65 percent among the telephone respondents. Female guardians (19%) were a large group here. We were also able to ascertain that 76 percent of the children examined have lived in the same Boston community since birth, so that 24 percent were not life-long residents.

The non-respondents to the mail survey who were contacted by

telephone, did not differ significantly enough from the larger group to warrant restricting the analyses to ages 8, 12, and 16 alone. However, as summarized in Table 4.1, this group shows certain tendencies: it has a lower education level, is less dentally informed, is more dependent on third-party payments, uses fewer supplementary fluorides, and is more apt to have received non-diagnostic or preventive treatment for their children at the last dental visit.

Table 4.2 demonstrates a slightly higher mean DMFT for this group as compared with the respondents by mail. The differences between a mail and telephone survey must be kept in mind; the telephone respondent may feel more captive and be more likely to respond with "I don't know". Also, the unwillingness to divulge information may be more pronounced on the telephone, resulting in more vague or inaccurate information. It must also be borne in mind that this is a group that did not respond to three consecutive mailings.

Questions concerning parents' knowledge about fluoridation yielded some surprising results. Of the entire group, 69 percent knew that fluoride reduced tooth decay, 12 percent thought it purified the water, and 19 percent did not know its purpose precisely. Thirty-nine percent did not know their community water supply was fluoridated. Yet, a significant number of children had received supplementary fluorides either systemically (40%), topically at the dental office (48%), topically in the form of a rinse (12%), or by use of fluoride toothpastes (79%).

Table 4.1

PROFILE OF SUBSAMPLE OF RESPONDENTS (MAIL) AND NON-RESPONDENTS* (TELEPHONE)

		Mail (%) n = 282	Telephone (%) n = 91
	(Mother as respondent	83	65
	(Female guardian as respondent	3	19
Parental Profile	(Max. education: Elementary School	6	8
	(High School	55	70
	(College, Vocational	27	14
	(Professional	10	1
	(no answer	2	7
	(Fluoride purpose: reduce decay	73	42
	("I don't know"	11	57
	(incorrect response	16	1
	(Fluoridation of community: yes	38	21
	(no	20	12
	("I don't know"	42	67
Dental Knowledge	(Does child need braces: yes	29	13
	(no	59	59
	("I don't know"	11	28
	(Use of systemic fluorides	46	9
Fluoride Use	(Use of fluoride toothpaste	79	63
	(Fluoride rinse - home	11	1
	(Fluoride rinse - school	3	3
	(Fluoride treatment - dental office	45	42
	(Orthodontic treatment: yes	12	3
	(no	87	95
	(Last dental visit: examination	62	46
	(cleaning	64	54
	(filling	36	30
Dental	(extraction	6	11
Care	(other	8	11
Profile	(Site of dental tx: private	60	59
	(Health center	19	21
	(Dental School/clinic	17	13
	(Never been to dentist	4	7
	(Dental bills paid by: parent	52	36
	Medicaid	33	27
	insurance	16	27
	don't know	-	10

*Parents of children ages 8, 12, 16 only.

Table 4.2

Boston Survey

MEAN DMFT COUNTS

Age Group	Mail		Telephone		No Response	
6-17	4.6	1,057			5.2	736
8, 12 and 16	4.6	282	5.3	91	5.1	152
8	1.3	112	1.6	37	1.8	48
12	4.5	84	4.7	27	4.6	57
16	8.9	86	11.1	27	9.2	47

Table 4.3 demonstrates that the users of systemic fluorides have slightly lower DMFT counts than non-users. For other fluorides, differences are trivial and/or in the wrong direction for both the 6-11 and 12-17 age group.

Other factors which relate to caries are oral hygiene and nutrition. The mail survey found that 89 percent of the children brushed one or more times per day, 85 percent of them ate sweets "sometimes" or "frequently" while 13 percent ate them "always". Figure 4.1 shows a general rise in DMFT with the frequency of sugar intake. (The 1 percent who answered "never" must be discounted, as this is too small a group). In an attempt to correlate snacking with television viewing, the hours of television per day were estimated for weekdays and weekends. Two to three hours was the most common response for weekdays, while weekends involved three to six or more hours of viewing per day. A relationship of these hours to DMFT is not apparent. Children who watch television six or more hours are not conspicuously different from those who watch for considerably fewer hours (Figure 4.2).

The level and type of dental care is important since it affects the caries rate (D), as well as the amount of treatment (M,F) reflected in mean DMFT counts. Ninety-five percent of the sample questioned had taken their children to the dentist. For a large group, the last dental visit was predominantly diagnostic or preventive

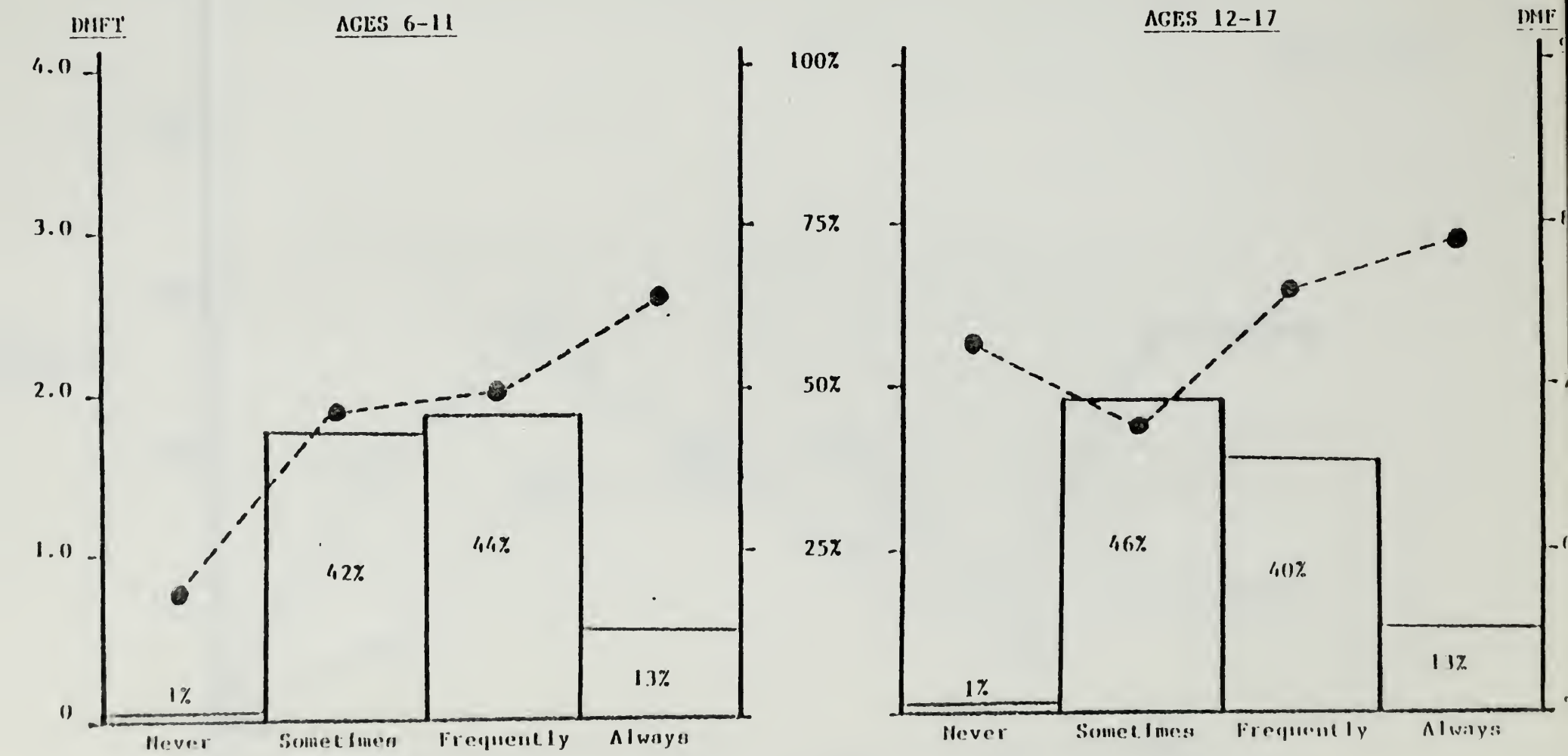
Table 4.3

QUES. 12 HISTORY OF FLUORIDE UTILIZATION/DMFT COUNTS Boston Survey

	Ages 6-11					Ages 12-17				
Fluoride	Mean # Years Used	Yes	DMFT	No	DMFT	Mean # Years Used	Yes	DMFT	No	DMFT
Tablets, drops, etc.	3.4	49%	1.9	51%	2.1	4.6	31%	6.9	69%	7.5
Rinse home -	2.2	10%	2.0	90%	2.0	3.8	6%	8.6	94%	7.2
Rinse - school	1.8	5%	1.9	95%	2.0	2.4	4%	7.1	96%	7.3
Topical - dental office	3.8	49%	1.9	51%	2.1	6.0	47%	7.8	53%	6.9
Fluoride toothpaste	6.5	78%	2.0	22%	2.1	10.0	81%	7.3	19%	7.1

Figure 4.1

QUES. 11 — RELATIONSHIP BETWEEN DMFTCOUNTS AND FREQUENCY OF SWEETS — Boston Survey



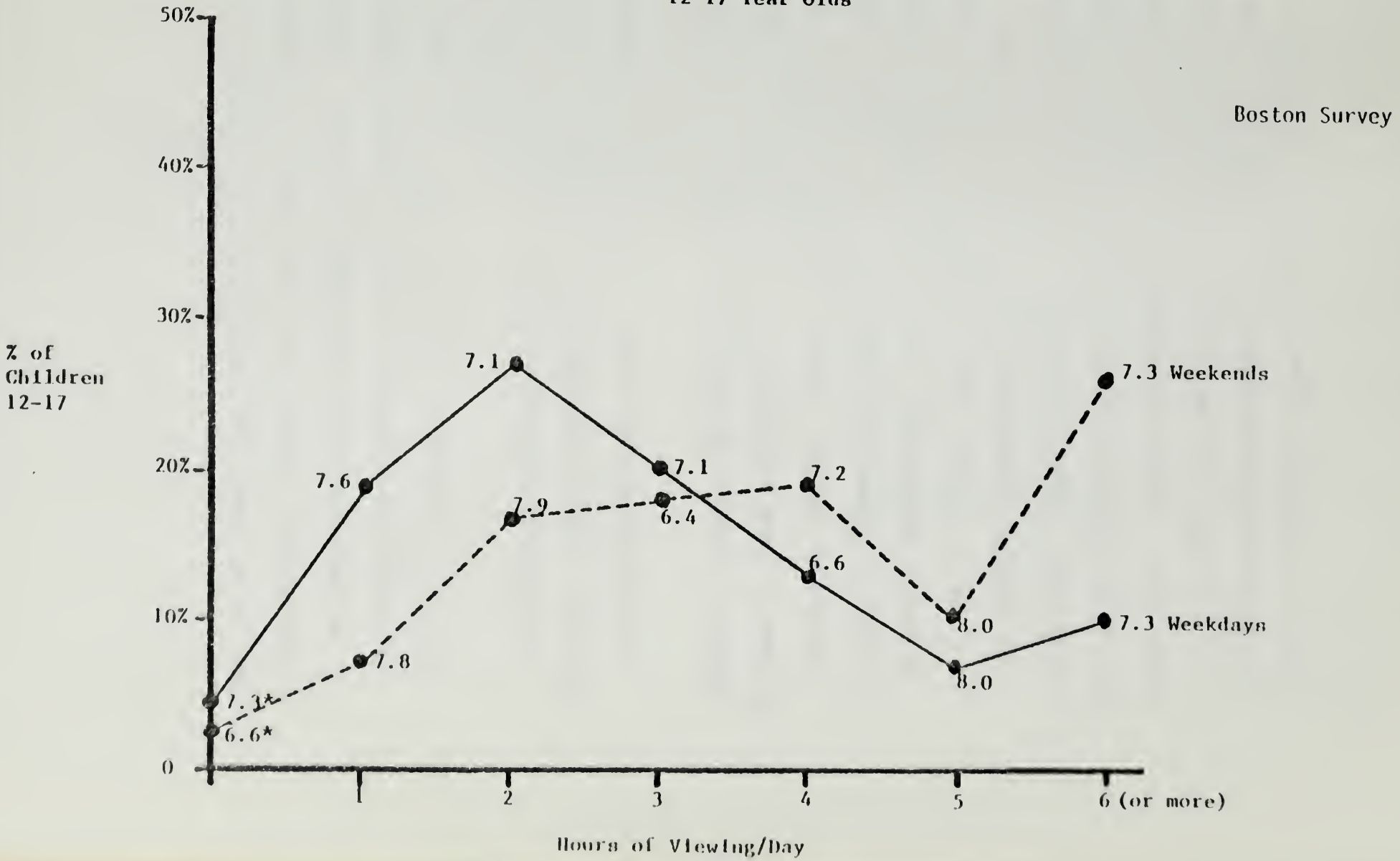
Frequency of Sweet Snacks
as perceived by parent

Figure 4.2

QUES. 10

HOURS OF TELEVISION VIEWING AND THEIR IMPACT ON DMFT

12-17 Year Olds



(Table 4.4), indicating that their oral health status was such that intervention was not necessary. This is supported by the fact that 79 percent of these visits were for "regular checkups", only 8 percent for pain, 3 percent for trauma, and 10 percent for "other". Sixty percent of these children receive their dental care from private offices, while neighborhood health centers are a distant second (19%). There does not seem to be a significant impact on DMFT by the source of dental care, although Table 4.5 shows a lower DMFT for the 3 percent of the 12-17 year olds attending dental school clinics. The converse is true for 6-11 year olds, however. They, along with the 6 percent attending hospital clinics, have the higher DMFT. Perhaps, this may reflect the higher incidence of treatment (F) in the younger age group in these two academic environments. However, these groups are too small in number to draw any conclusions.

Fifty percent of parents paid dental bills themselves, while 33 percent relied on Medicaid and 16 percent on insurance. The third-party payment recipients show a somewhat higher mean DMFT than the self-payers (Table 4.5).

Since utilization of dental services is positively correlated with socio-economic status, the level of maximum parental education was investigated. The majority (54%) had a high school education, while 28 percent had college or vocational training. In an attempt to correlate this with DMFT counts, the highest DMFT counts for 6-11 year

Table 4.4

QUES. 15 - 18 PROFILE OF HISTORY OF DENTAL CARE FOR 95% OF SAMPLE Boston Survey

Purpose for last dental visit	%	*Tx at last visit	%	Site of Dental Care	%	Mode of Payment	%
Regular check-up	79%	Examination	62%	Private	60%	Parent/ Guardian	50%
Pain	8%	Teeth Cleaned	65%	Dental School	3%	Medicaid	33%
Trauma	3%	Filling	39%	Clinic	7%	Insurance	16%
Other	10%	Extraction	9%	Health Center	19%	Other	2%
		Other	9%	Hospital Clinic	5%		
				Other	1%		

*Possibility of multiple procedures per visit

Table 4.5

IMPACT OF SITE OF DENTAL CARE AND PAYMENT MODE ON DMFT Boston Survey

Site of Dental Care				
Ages:	6-11		12-17	
	%	DMFT	%	DMFT
Private Office	60%	2.0	68%	7.5
Dental School	2%	3.5	3%	5.3
Clinic	7%	1.8	7%	7.5
Health Center	24%	1.9	17%	7.6
Hospital Clinic	6%	2.9	4%	7.9
Other	1%	2.8	1%	2.8

Mode of Payment				
Ages:	6-11		12-17	
	%	DMFT	%	DMFT
Parent/ Guardian	45%	1.8	53%	7.1
Medicaid	38%	2.4	27%	7.5
Insurance	15%	2.3	17%	7.6
Other	2%	2.1	3%	6.9

olds were found for those whose parents had only elementary school education. In the 12-17 year olds, the highest DMFT were for the majority, the high school educated group.

The orthodontic information revealed that only 8.5 percent of the children have or ever had braces or retainers on their teeth. However, 24 percent of them were perceived by their parents as needing orthodontic treatment. Two percent were reported as having habits such as thumb-sucking, either in the present or past.

In the questions concerning trauma, 33 percent reported that their children engaged in contact sports, but only 21 percent of these (7 percent of entire sample) wore a mouthguard most of the time. Another 12 percent (4 percent of sample) wore one sometimes. Nineteen percent of parents reported some injury to their children's teeth, resulting in permanent damage.

There is no precedent for a mail survey of this magnitude for the City of Boston, so parallels and comparisons cannot be made. However, the mail survey does serve to elucidate and raise questions about many aspects of the Phase One and Phase Two findings in the Boston study.

The role of supplementary fluorides is of interest to researchers. We were unable to demonstrate an impact on DMFT with the survey techniques used. However, the frequency of encounters with sweet snacks is shown to correlate positively with DMFT, so that even though the

caries experience of Boston school children is diminishing, their exposure to sweets is an important factor in DMFT.

The possibly higher DMFT for third-party patients is of interest, since it raises questions of increased utilization of dental services or increased rate of treatment. It will be interesting to note if similar trends are found in the MDC study, and if the breakdown of centers for treatment is different, creating any other impact on DMFT. We cannot readily draw any conclusions relative to education level of parents and DMFT, although the two highest education groups had the lower DMFT. Again, further data for MDC may elucidate this point.

The Orthodontic Index determined that 20.2 percent of the children examined were in need of orthodontic treatment (23.4 percent of 12-17 year olds). It is interesting to note that a very close number, 24 percent, were perceived as needing treatment by their parents. Also, overjet was the most commonly-found occlusal disturbance. In this mail survey we find 26 percent of the sample having a history of thumbsucking or other habit which can be related to overjet.

There is some discrepancy in the trauma information. Only 8 percent of male and 4 percent of females were found to have traumatized teeth during the actual examination, but parents reported an incidence of 19 percent. This could be because cases were missed in examination, or the injury so minor as to not be recorded. Also, missing teeth may not have been recorded as trauma when such was the case. In addition, the

injury mentioned by the parent may refer to deciduous teeth lost by the time of the exam. Finally, the problem of recall on the part of the parents must be considered, i.e., the accident could have happened to a subject's sibling.

It is evident that more work could be done in the analysis of the mail survey data and its relation to the caries data. Interested individuals could spend an extended period partitioning the parental and the caries data to provide numerous correlations and cross-comparisons. At the very least, it would be of interest to put some of the observations noted herein (e.g.: increasing caries experience with increasing sugar consumption) on firmer statistical footing by way of appropriate testing procedures.

V. Discussion: Comparison to Other Studies

It is of interest to compare the caries findings of the Boston study with those of other parts of the United States and the world. Many studies have been carried out to determine the impact of water fluoridation, noting the large drop in DMFT after a period of fluoridation.

A recent study by the University of North Carolina documents a reduction in the prevalence of DMF teeth in children. The greater proportion of the affected teeth were filled, while a smaller proportion are missing, as compared with a previous study in 1960-1963. 17 year old whites in this study had a DMFT of approximately 10. This is very close to the Boston data. Scores for non-whites were significantly lower. Those in the study were gathered from the entire state, regardless of fluoridation status.

Closer to Boston, a study was conducted in New Haven, Connecticut in 1977, after ten years of fluoridation. It was found that 24.4 percent of school-age children were caries free, and the DMFT at age 16 was 5.60. This represents a drop of 52.4 percent since 1967, and it is, of course, lower than the Boston mean DMFT at that age.

In Rhode Island, in 1974, after twenty years of fluoridation, the DMFT for 16 year olds was only 6.0. Rhode Island geographically is close to Boston and similar to it in many ways. Yet, a significantly lower DMFT can be observed.

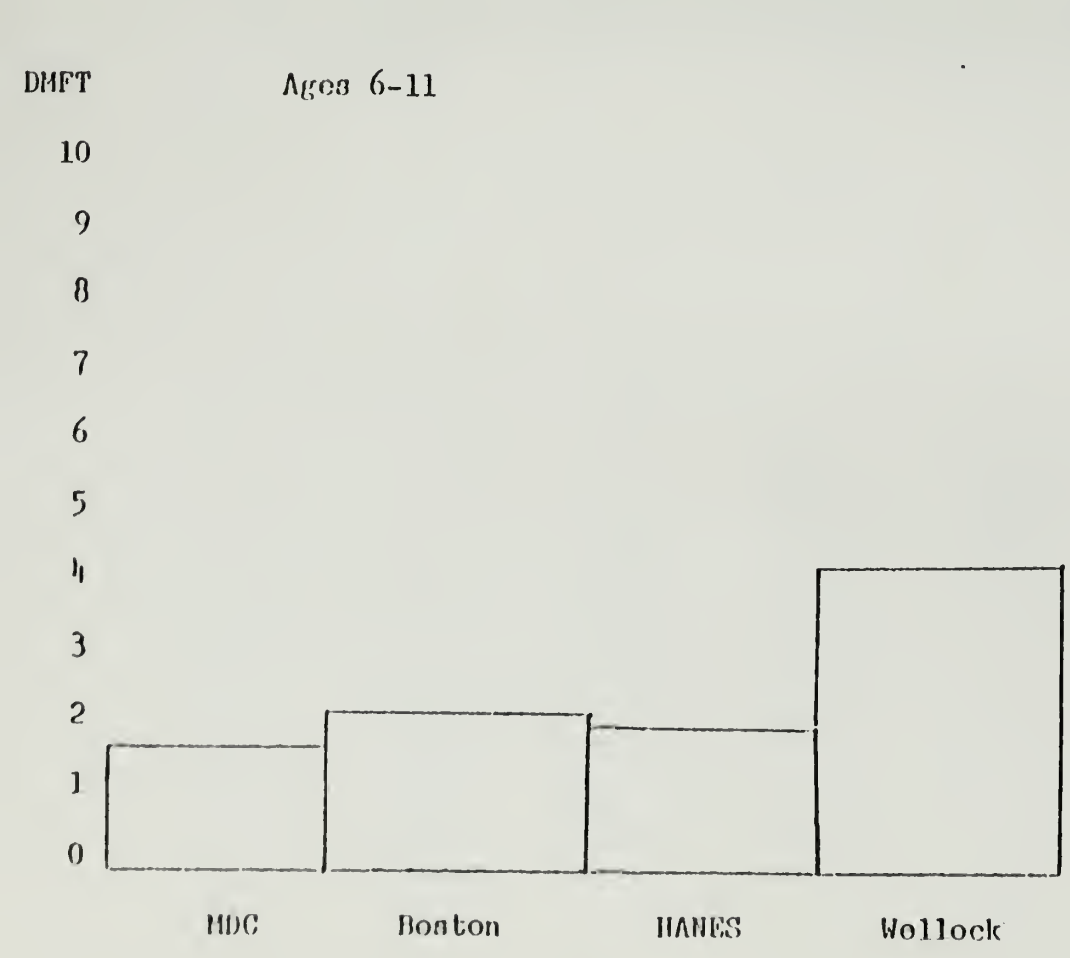
Areas of already low decay rates have reported even lower DMFT after fluoridation. One such study comes from Winona, Minnesota where the average DMFT at age 11 was 1.84 in 1976, after 11 years of fluoridation. In 1965, the DMFT for this group was 4.08. This latter number is closer to Boston's 11 year-old children's DMFT than the post-fluoridation estimate.

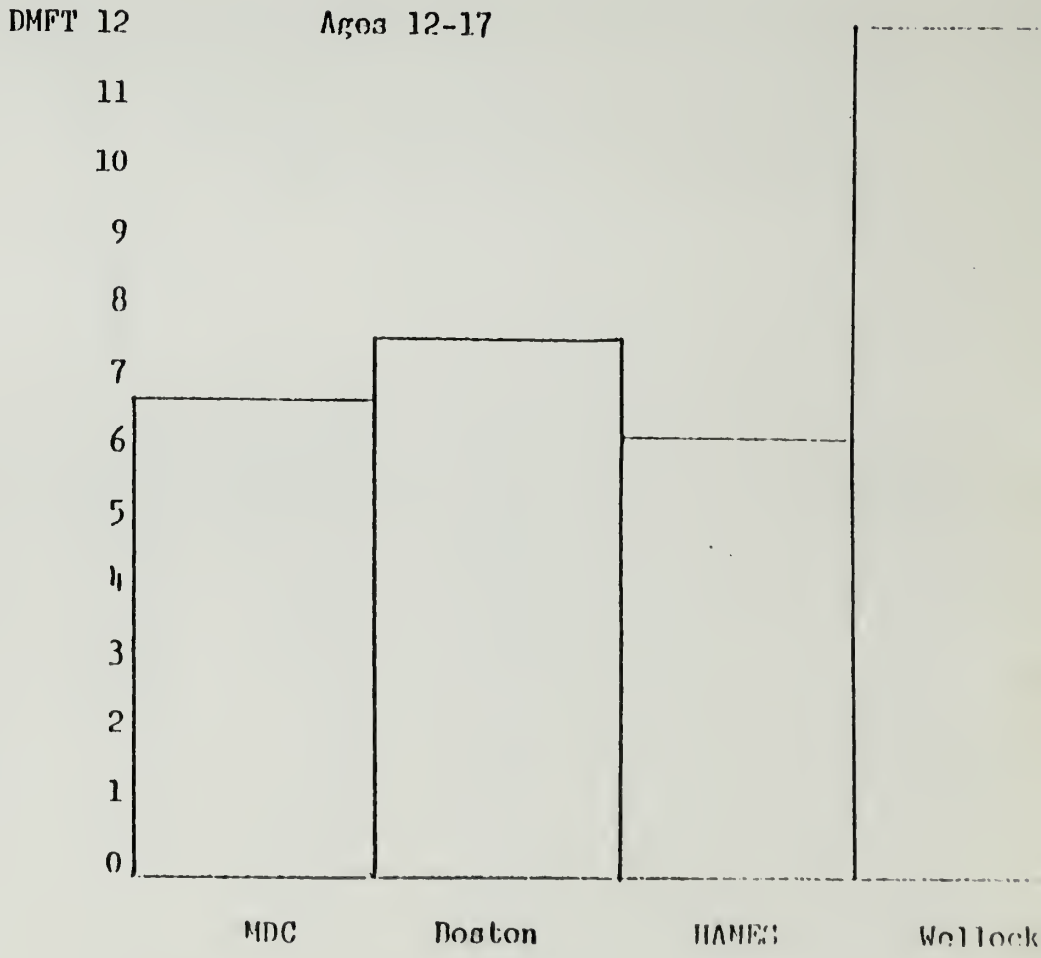
Studies from outside the United States show similar findings. In Toronto, Canada, in 1978, 11 year olds had a DMFT of 1.5 after 14 years of fluoridation. Further away, in Perth, Australia, 10 year old children had a DMFT of 1.9 in 1977; a drop from 4.8 in 1967.

These comparisons serve to illustrate that, while the caries rate in Boston has dropped, and we have made a good deal of progress, there is still a way to go. Some of the fluoridated cities mentioned above had pre-fluoridation DMFT lower than those of Boston. It may be, in fact, that Boston is coming into line with the rest of the country. Figure 5.1 compares Boston with the nationwide HANES study of 1971-74, and it can be seen that Boston has come closer to the nationwide average, but it is still higher. This bears further analysis and discussion before definitive statements can be formulated about the definite decline in the caries rate.

Figure 5.1

Comparison of DMFT: (permanent)
MDC Study - 1980
Boston Study - 1979
HANES Study - 1971 - 1974 Nationwide
Wellock Study - 1950 - 1951 Massachusetts





APPENDIX I

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Patrick J. Kennedy	b	3	4	3	4	3	4						
343 Saratoga, East Boston 02128	g	4	3	4	3	4	3						
J. Stanley Curran													
569-2681													
John Cheverus Middle	b						9	6	6				
10 Moore, East Boston 02128	g						8	6	6				
Robert T. Conway													
567-2984													
Umana Technical	b							4	3	4	3	4	3
312 Border, East Boston 02128	g							3	4	3	4	3	4
Gustave Anglin													
569-6230													
Warren-Prescott-Holden	b	4	3	4	3	4	3						
50 School Street, Charlestown 02129	g	3	4	3	4	3	4						
Marilyn R. Kiely													
242-5486 (Warren-Prescott) 242-2787 (Holden)													
South Boston High	b									5	5	5	5
95 G, South Boston 02127	g									5	5	5	5
Jerome C. Winegar													
268-2751													
Joseph J. Hurley	b	4	3	4	3	4	3						
70 Worcester, Boston 02118	g	3	4	3	4	3	4						
Ann Garvin													
536-2566													
Blackstone	b	3	4	3	4	3	4						
380 Shawmut Ave, Boston 02118	g	4	3	4	3	4	3						
Thomas Clegg													
267-7050, 267-7051													
Joseph P. Tynan	b	4	3	4	3	4	3						
650 East Fourth, South Boston 02127	g	3	4	3	4	3	4						
John Haverty													
268-5316													
Eliot Elementary	b	3	4	3	4	3	4						
16 Charter, Boston 02113	g	4	3	4	3	4	3						
Charles J. Garvey													
227-6595													
Michelangelo Middle	b	6	6										
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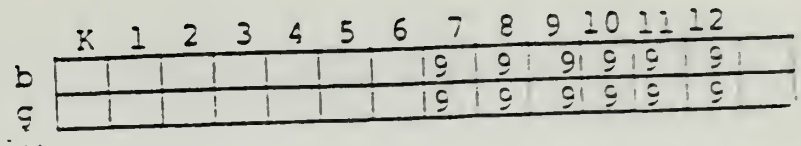
John P. Breen													
227-1897													

bert L. Wood, Superintend



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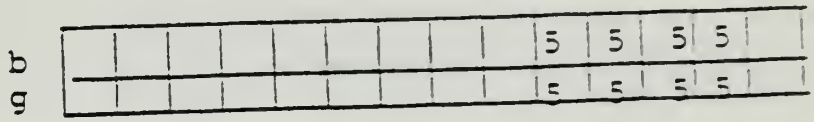
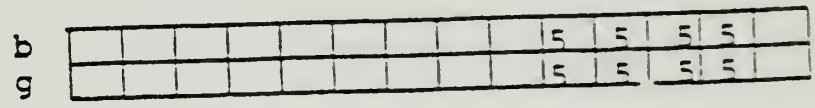
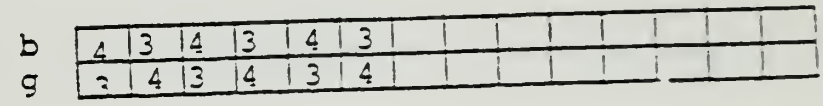
Ave Louis Pasteur, Boston 02115
.chael Contompasis
56-2250



oston Latin Academy
80 Talbot Ave, Dorchester 02124
. Louise Dooley(acting)
25-4240



adison Park High
5 New Dudley, Roxbury 02119
homas Hennessey
45-2440



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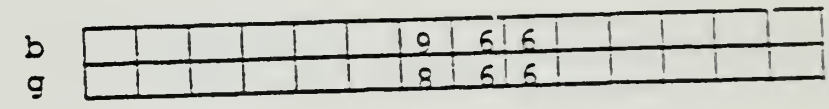
Joseph J. Prendergast
427-4573



Mary E. Curley Middle
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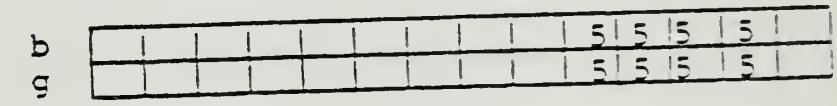
Daniel E. Kearns
524-2020



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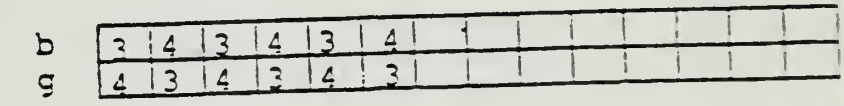
Edward F. McHugh
524-3373



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Ralph Galeota (acting)
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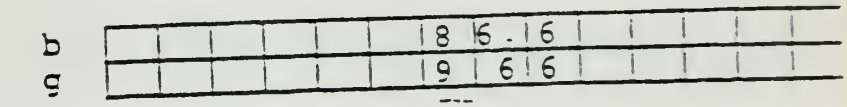

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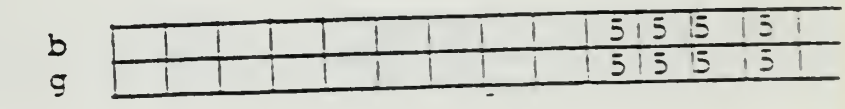
George A. Johnson
427-4546



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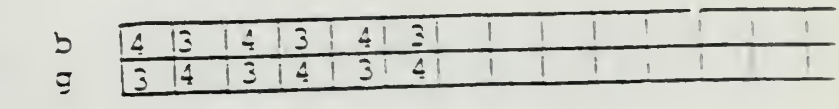
Charles F. Ray
427-2524



James J. Chittick
154 Ruskindale Rd., Mattapan 02126
Gladys Wood
361-0353

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) John Boyle O'Reilly
347 Dorchester, So. Boston 02127
Anne L. O'Neill
269-1540

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1 Alexander Hamilton
198 Strathmore, Brighton 02135
John W. Molloy
782-0900

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g								10	10				

6 Thomas A. Edison Jr. High
60 Glenmont Rd., Brighton 02135
Joseph A. Bage
782-3005

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g										5	5	5	5

5 Brighton High
25 Warren, Brighton 02135
Francis D. Tracy
782-6386

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0 Pauline Agassiz Shaw
429 Norfolk, Dorchester 02124
John J. Bradley
436-3145

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8 Edward Everett
71 Pleasant, Dorchester 02125
Robert A. Glennon
265-2762

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2 Wm. E. Endicott
2 McLellan, Dorchester 02121
Gladys R. DeCosta
825-5196

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8 Ellen H. Richards
80 Beaumont, Dorchester 02124
Nicholas G. Bergin
265-7088

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0 William Monroe Trotter
135 Humboldt Ave., Dorchester 02121
Barbara L. Jackson
427-3180

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g							8	6	6				

Martin Luther King Jr. Mid.
77 Lawrence Ave., Dorchester 02121
Will Ella Brown
445-4120

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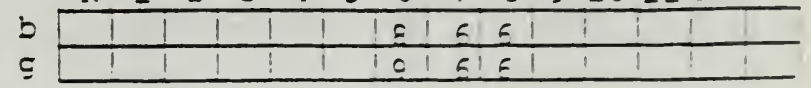
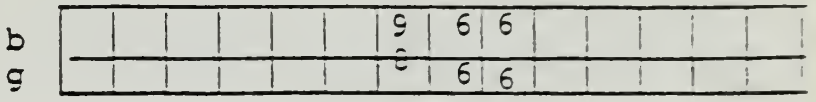
Frank V. Thompson Middle
100 Maxwell, Dorchester 02124
Gerald Hill
282-4040



John W. McCormack
315 Mt. Vernon, Dorchester 02125
John D. Callahan
825-7949

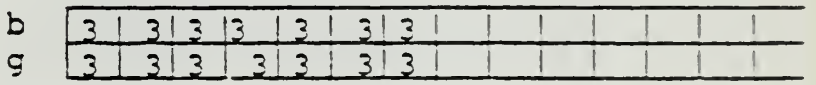


Dorchester High
9 Peacevale Rd., Dorchester 02124
Edward C. Lambert
436-2065

Jeremiah E. Burke High
60 Washington, Dorchester 02121
Douglas G. Foster
427-0240

Boston Tech High
205 Townsend, Dorchester 02121
Henry F. Mulloy
445-4381

Dennis C. Haley
570 American Leg. Hwy.
Roslindale, 02131
Robert J. Berry, 522-1661



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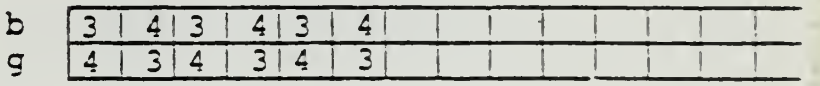
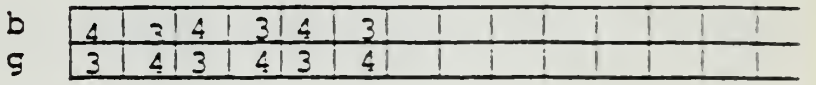
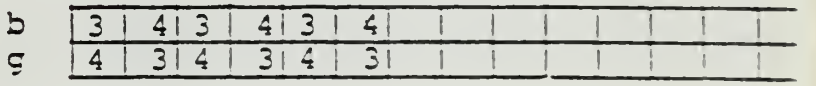
Thomas Kennedy
323-4480



Elihu Greenwood
612 Metropolitan Ave., Hyde Park
02136
Paul M. Donovan, 361-5393



Hemenway
Millstone Rd., Hyde Park 02136
Joseph E. McKeigue
361-1920



William L. Cannon
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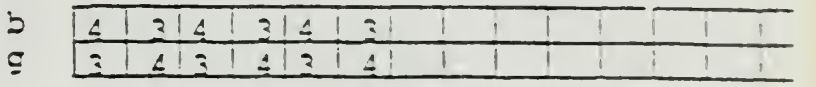
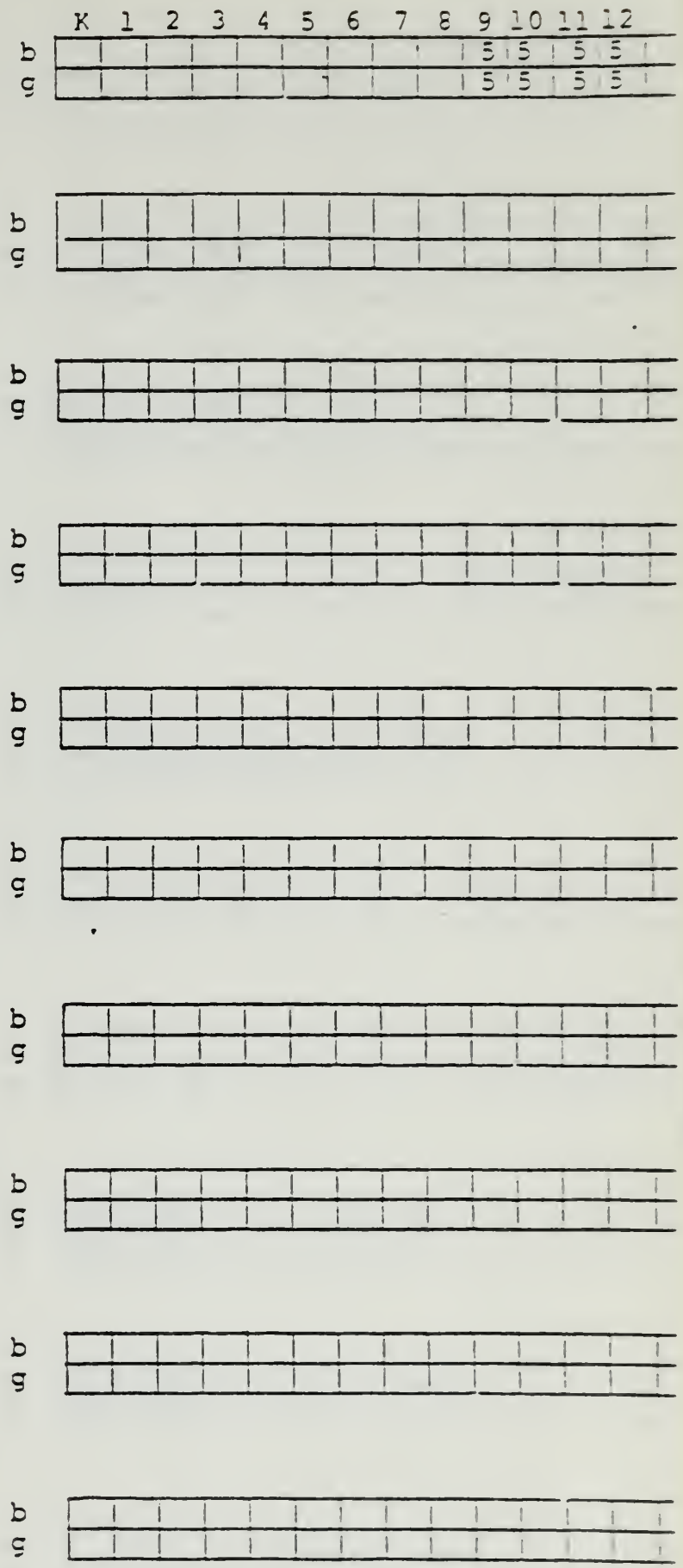
West Roxbury, 02132
Martin J. Greeley
327-5304



West Roxbury School
1205 VFW Parkway, West Roxbury 02132
Donald Burgess
323-4866



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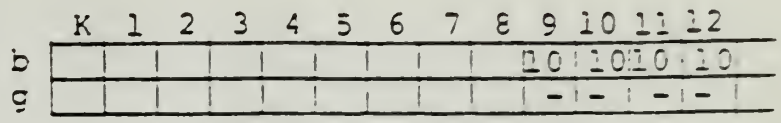
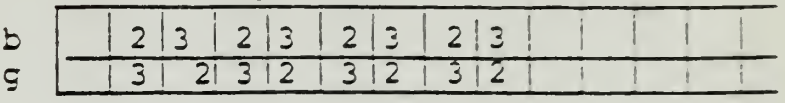
	g 5	2	2	2	2	2	2	2	2				
Gate of Heaven Elementary 609 East Fourth, So. Boston 02127 Sr. M. Prudence McCath 268-8431	b	3	2	3	2	3	2	3	2				
	g	2	3	2	3	2	3	2	3				
St. Anthony 53-63 Prince, Boston 02113 Sr. Carmel Donnelly 742-3260	b 5	2	2	2	2	2	2	2	2				
	g 5	2	2	2	2	2	2	2	2				
Julie Billiart High 20 A Tileston, Boston 02113 Sr. Alice L. Fusco 523-1508	b									-	-	-	-
	g									1	0	1	0
St. Andrew 86 Wachusett, Jamaica Plain 02130 Sr. Elizabeth Brennan 524-7733	b	2	3	2	3	2	3	2	3				
	g	3	2	3	2	3	2	3	2				
St. Patrick Secondary 131 Mt. Pleasant Ave., Roxbury 02119 Sr. Julia Yircas, 427-7399	b									-	-	-	-
	g									1	0	1	0
Mt. St. Joseph Academy 617 Cambridge St., Brighton 02135 Sr. Marie De Lourdes 254-8383	b									-	-	-	-
	g									1	0	1	0
St. Gregory Elementary 2214 Dorchester Ave., Dorchester 02124 Sr. Rosemary Crowley, 296-1210	b 5	2	2	2	2	2	2	2	2				
	g 5	2	2	2	2	2	2	2	2				
St. Ambrose 23 Leonard, Dorchester 02122 Sr. Frances Ryan 825-9400	b 5	2	2	2	2	2	2	2	2				
	g 5	2	2	2	2	2	2	2	2				
St. William 100 Savin Hill Avenue, Dorchester, 02125 Sr. Alice Saunders, 265-7110	b	3	2	3	2	3	2	3	2				
	g	2	3	2	3	2	3	2	3				

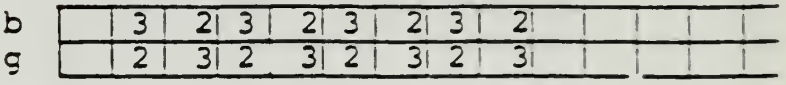
Boston College High
150 Morrissey Blvd., Dorchester
02125
Rev. Thomas J. Gibbons, 436-3900



Sacred Heart
1035 Canterbury, Roslindale 02131
Sr. Marion P. Feeley
323-2500

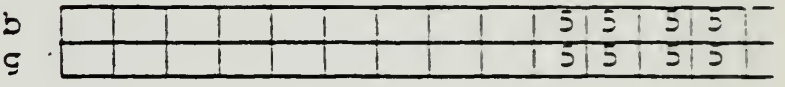


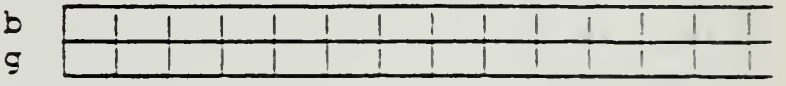
St. Theresa
40 St. Theresa Ave., West Roxbury
02132
Sr. M. Antoine C S J, 323-1050

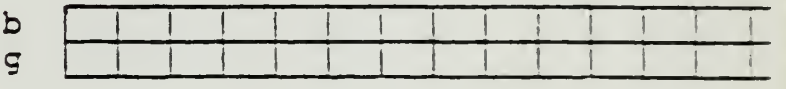


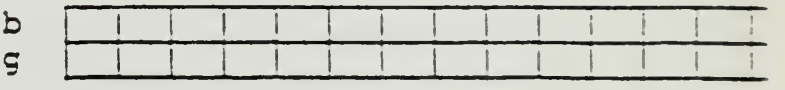
Catholic Memorial High
Baker & Gardner, West Roxbury 02132
Br. William B. Dobbins
323-7333

Hyde Park Academy
14 Everett St., Hyde Park 02136
Henry Lodge
364-5595









APPENDIX II

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TO 4:	4	2	3	2	2	2	1	1	4	1	2	4	2	1	3	4	1	1	1	1	1	
TO 5:	3	1	2	4	3	4	3	2	4	5	2	1	5	3	1	3	3	3	3	[illegible]	3	
TO 6:	4	3	1	6	2	5	1	6	6	6	6	6	5	5	5	1	6	2	5	[illegible]	5	
TO 7:	6	2	6	2	5	1	6	7	6	2	1	1	1	6	5	5	3	2	3	2	2	
TO 8:	6	4	8	1	2	6	4	2	5	3	4	7	8	2	1	2	1	1	1	7	2	
TO 9:	1	4	9	5	2	2	6	2	1	9	7	9	9	3	3	1	[illegible]	3	3	3	5	
TO 10:	10	10	3	1	5	8	7	8	8	8	5	3	6	7	1	4	6	[illegible]	6	[illegible]	[illegible]	
TO 11:	11	3	10	6	5	6	1	10	6	4	7	1	1	8	3	7	3	11	6	[illegible]	[illegible]	
TO 12:	12	4	3	6	9	1	6	5	12	12	6	10	11	10	2	2	11	1	11	3	1	
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0	48:	25	62	49	24	28	32	55	59	74	99	80	96	31	18	14	86	25	69	85	82	7

APPENDIX III

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Dental Health Survey

Please mark an x in the box next to your answer to the following questions.

1. The person filling out this questionnaire is the

___ mother

___ father

___ male guardian or relative

___ female guardian or relative

___ other

2. Which answer best describes the purpose of public water fluoridation?

___ to reduce pollution

___ to improve the taste of the water

___ to reduce tooth decay

___ to purify the water

___ I don't know

3. Does your child play contact sports such as football, hockey, lacrosse, rugby, boxing, etc.?

___ yes

___ no

___ I don't know

4. Does your child wear a mouthguard when he/she plays contact sports? Mouthguards are any devices which are supposed to protect the teeth.

___ always or most of the time

___ some of the time

___ hardly ever or never

___ I don't know

___ doesn't play contact sports

5. Has your child ever had an injury to the teeth? Some examples of tooth injuries are teeth knocked out, broken teeth, and chipped teeth.

___ yes, the type and cause of injury were _____

_____

___ no

___ I don't know

6. Has your child ever had his/her teeth straightened by using braces or bands or a retainer on the teeth?

___ yes

___ no

___ I don't know

7. Do you think his or her teeth need straightening by using braces or bands or a retainer on the teeth?

___ yes

___ no

___ I don't know

8. Many children suck their thumbs or fingers, sometimes until a fairly late age. Did your child ever suck his/her thumb or finger?

___ yes, still does

___ yes, until age ____

___ no, never did

9. How often would you say your child brushes his/her teeth?

___ two or more times a day

___ about once a day

___ three or four times a week

___ once or twice a week

10. Many children watch television and eat snack foods while watching. Please estimate the number of hours per day your child watches television.

hours per day during the week	hours per day during the weekend
___ 0	___ 0
___ 1	___ 1
___ 2	___ 2
___ 3	___ 3
___ 4	___ 4
___ 5	___ 5
___ 6 or more	___ 6 or more

11. How frequently does your child eat sweet snacks such as desserts, cookies, candy, jelly, soft drinks, jello, ice cream, pudding, sugar-coated cereal, chewing gum, candied popcorn, etc.?

___ never

___ sometimes

___ frequently

___ always

12. Does your child now use, or has he/she ever used, any of the following? Check all that apply.

___ fluoride tablets, pills, drops or vitamins with fluoride (If yes, for how many years ____)

___ fluoride rinse at home (If yes, for how many years ____)

___ fluoride rinse at school (If yes, for how many years ____)

___ fluoride applied at the dental office (If yes, for how many years ____)

___ fluoride toothpaste (If yes, for how many years ____)

13. Has your child ever been to the dentist? ___ yes ___ no
If your answer was no, please skip to question 19.

14. If your answer to question 13 was yes, what was the approximate date (month and year) of his/her last visit as best you can recall?

_____
(month) (year)

15. What was the reason for your child's last visit to the dentist? Check all that apply.

___ regular check-up

___ pain

___ dental accident (tooth knocked out, chipped, etc.)

___ other

16. What happened at this visit? Check all that apply.

___ examination

___ teeth cleaned

___ filling

___ tooth pulled out

___ other

17. Where did your child last receive dental care?

___ private dental office

___ dental school

___ clinic

___ neighborhood health center

___ hospital dental clinic

___ other

18. Your child's dental bills are paid by

___ parent/guardian

___ Medicaid

___ Insurance

___ other

19. The next question is about you. We ask it so that we will be able to describe our sample as a group. Your answers will not be identified with you in any way
Please circle the number of years of education completed by both parents of the child. If the child does not live with his/her parents, circle the number of years of completed education for the guardians.

	Mother	Father	Male Guardian or Relative	Female Guardian or Relative
Elementary School	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4
	5	5	5	5
	6	6	6	6
	7	7	7	7
	8	8	8	8
High School	9	9	9	9
	10	10	10	10
	11	11	11	11
	12	12	12	12
College or Vocational Training	13	13	13	13
	14	14	14	14
	15	15	15	15
	16	16	16	16
Professional or Graduate School	17	17	17	17
	18	18	18	18
	19+	19+	19+	19+

20. Which answer describes the water supply situation in your community?

___ it is fluoridated

___ it is non-fluoridated

___ I don't know

21. Has your child always lived in your present community since birth?

___ yes ___ no If no, please fill out the following: Starting with your child's first residence, list below in order the cities and states in which your child has lived and the length of time for each location.

	City/Town	State	Duration	
(1)	_____ (first residence)		_____ (from)	_____ (to)
(2)	_____ (second residence)		_____ (from)	_____ (to)
(3)	_____ (third residence)		_____ (from)	_____ (to)
(4)	_____ (fourth residence)		_____ (from)	_____ (to)
(5)	_____ (fifth residence)		_____ (from)	_____ (to)

22. Please provide the following:

Your name _____ (first name) (last name)

Your address _____ (street) (town) (zip)

Your child's name _____

Your child's school _____

Your child's grade _____

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Dental Health Survey — Boston

Please mark an x in the box next to your answer to the following questions.

n = 1149 % of Total		Ages 8, 12, 16 only Mail % n = 282	 Telephone % n = 91
1.	The person filling out this questionnaire is the		
83	mother	83	65
10	father	11	9
1	male guardian or relative	1	7
4	female guardian or relative	3	19
2	other	2	1
2.	Which answer best describes the purpose of public water fluoridation?		
2	to reduce pollution	1	0
2	to improve the taste of the water	2	0
69	to reduce tooth decay	73	42
12	to purify the water	12	1
13	I don't know	11	57
2	no answer	1	0
3.	Does your child play contact sports such as football, hockey, lacrosse, rugby, boxing, etc.?		
33	yes	34	not asked
65	no	64	
2	I don't know	2	

Boston

4. Does your child wear a mouthguard when he/she plays contact sports? Mouthguards are any devices which are supposed to protect the teeth.

		Mail	Telephone
7	always or most of the time	7	not asked
4	some of the time	4	
22	hardly ever or never	21	
3	I don't know	4	
60	doesn't play contact sports	61	
3	no answer	3	

5. Has your child ever had an injury to the teeth? Some examples of tooth injuries are teeth knocked out, broken teeth, and chipped teeth.

19	yes, the type and cause of injury were _____	17	not asked
80	no	81	
0.5	I don't know	1	
0.5	no answer	1	

6. Has your child ever had his/her teeth straightened by using braces or bands or a retainer on the teeth?

8.5	yes	12	5
91	no	87	95
0.5	I don't know	1	0

7. Do you think his or her teeth need straightening by using braces or bands or a retainer on the teeth?

24	yes	29	13
61	no	59	59
13	I don't know	11	18
2	no answer	1	0

Boston

8. Many children suck their thumbs or fingers, sometimes until a fairly late age. Did your child ever suck his/her thumb or finger?

		Mail	Telephone
8	yes, still does	7	not asked
18	yes, until age ____	20	
74	no, never did	73	

9. How often would you say your child brushes his/her teeth?

44	two or more times a day	48	
45	about once a day	41	not asked
6	three or four times a week	5	
5	once or twice a week	6	

10. Many children watch television and eat snack foods while watching. Please estimate the number of hours per day your child watches television.

hours per day during the week		Mail	hours per day during the weekend		Mail	
3	0	3	2	0	1	not asked
16	1	15	6	1	6	
30	2	33	13	2	14	
22	3	22	19	3	22	
13	4	12	20	4	21	
6	5	5	11	5	10	
8	6 or more	8	24	6 or more	23	
2	no answer/ don't know	2	5		3	

Boston

11. How frequently does your child eat sweet snacks such as desserts, cookies, candy, jelly, soft drinks, jello, ice cream, pudding, sugar-coated cereal, chewing gum, candied popcorn, etc.?

		Mail	Telephone
1	never	1	7
43	sometimes	48	50
42	frequently	39	36
13	always	12	7

1 no answer

12. Does your child now use, or has he/she ever used, any of the following? Check all that apply.

		Mail	Telephon
40	fluoride tablets, pills, drops or vitamins with fluoride (If yes, for how many years ____)	46	9
8	fluoride rinse at home (If yes, for how many years ____)	11	1
4	fluoride rinse at school (If yes, for how many years ____)	3	3
48	fluoride applied at the dental office (If yes, for how many years ___)	45	42
79	fluoride toothpaste (If yes, for how many years ____)	79	63

13. Has your child ever been to the dentist? 95 yes 5 no
If your answer was no, please skip to question 19.

Mail	Telephon
95	93

14. If your answer to question 13 was yes, what was the approximate date (month and year) of his/her last visit as best you can recall?

_____
(month) (year)

		Boston	
15.	What was the reason for your child's last visit to the dentist? Check all that apply.		
79	regular check-up	80	85
8	pain	5	0
3	dental accident (tooth knocked out, chipped, etc.)	3	7
10	other	10	2
16.	What happened at this visit? Check all that apply.		
62	examination	62	48
65	teeth cleaned	64	54
39	filling	36	50
9	tooth pulled out	6	11
9	other	8	21
17.	Where did your child last receive dental care?		
60	private dental office	60	59
3	dental school	3	2
7	clinic	7	3
19	neighborhood health center	19	21
5	hospital dental clinic	5	7
1	other	2	0
4	never been	4	7

		Boston	
18.	Your child's dental bills are paid by	Mail	Telephone
50	parent/guardian	52	36
33	Medicaid	33	27
16	Insurance	16	27
2	other	0	10

19. The next question is about you. We ask it so that we will be able to describe our sample as a group. Your answers will not be identified with you in any way
Please circle the number of years of education completed by both parents of the child. If the child does not live with his/her parents, circle the number of years of completed education for the guardians.

		Mother	Father	Male Guardian or Relative	Female Guardian or Relative	Mail	Telephon
Entire Group	Elementary School	1	1	1	1		
		2	2	2	2		
		3	3	3	3		
		4	4	4	4		
		5	5	5	5		
		6	6	6	6		
		7	7	7	7		
6		8	8	8	8	6	8
		9	9	9	9		
	High School	10	10	10	10		
		11	11	11	11		
54		12	12	12	12	55	70
		13	13	13	13		
	College or Vocational Training	14	14	14	14		
		15	15	15	15		
28		16	16	16	16	27	14
		17	17	17	17		
	Professional or Graduate School	18	18	18	18		
8		19+	19+	19+	19+	10	1
3	no answer					2	7

20. Which answer describes the water supply situation in your community?

		Mail	Telephone
36	it is fluoridated	38	21
22	it is non-fluoridated	20	12
39	I don't know	42	67
3	no answer	4	0

Tel.

21. Has your child always lived in your present community since birth?

2 no answer

77 76 yes 23 22 no 0 If no, please fill out the following: Starting with your child's first residence, list below in order the cities and states in which your child has lived and the length of time for each location.

	City/Town	State	Duration (from)	Duration (to)
(1)	_____ (first residence)		_____	_____
(2)	_____ (second residence)		_____	_____
(3)	_____ (third residence)		_____	_____
(4)	_____ (fourth residence)		_____	_____
(5)	_____ (fifth residence)		_____	_____

22. Please provide the following:

Your name _____ (first name) (last name)

Your address _____ (street) (town) (zip)

Your child's name _____

Your child's school _____

Your child's grade _____

APPENDIX IV

DENTAL SURVEY RECORD

INSTRUCTIONS FOR CODING

1. Six rows, numbered 1-6, are used for marking each tooth. In row 1 mark P or D according as the tooth is permanent or deciduous. In the same row mark S, U, or E according as the tooth is sound, unerupted, or extracted; otherwise leave blank.

2. Rows 2-6 represent each surface. Mark F, D, or B according as the surface has a filling, a carious lesion, or both. If the surface is sound, leave blank.

3. Use ordinary pencil - Not ball point pen. Connect dots by marking through the proper letter. Erase completely when making changes or corrections.

DATE OF EXAM _____ MO. DAY YEAR

NAME OF SUBJECT _____ SCH/GRADE _____

I. D.

CODE

GRADE

SCHOOL

SEX

DATE OF BIRTH YR. MO.

UPPER RIGHT

2 2nd MOLAR	3 1st MOLAR	4 2nd BIC	5 1st BIC	6 CUSPID	7 LAT. INC.	8 CEN. INC.
P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6

UPPER LEFT

15 2nd MOLAR	14 1st MOLAR	13 2nd BIC	12 1st BIC	11 CUSPID	10 LAT. INC.	9 CEN. INC.
P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6

LOWER LEFT

18 2nd MOLAR	19 1st MOLAR	20 2nd BIC	21 1st BIC	22 CUSPID	23 LAT. INC.	24 CEN. INC.
P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6

LOWER RIGHT

31 2nd MOLAR	30 1st MOLAR	29 2nd BIC	28 1st BIC	27 CUSPID	26 LAT. INC.	25 CEN. INC.
P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E	P D S U E
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6

e_____ School_____ Town_____

[ ][ ][ ] ID (1st digit is examiner; last 3 are sequence number)

[ ][ ] TOWN / SCHOOL

[ ][ ][ ] SCHOOL

[ ][ ] GRADE

[ ][ ] [ ][ ] [ ][ ] DATE OF EXAM

[ ] USA

[ ] SEX (1 = MALE; 2 = FEMALE)

[ ] RACE (

[ ][ ][ ][ ] MONTH AND YEAR OF BIRTH

[ ][ ][ ] TOWN OF RESIDENCE

Hygiene Index

[ ] [ ] [ ] [ ] [ ] [ ]

---

ival Inflammation

3 7 12 19 24 28

[ ][ ][ ][ ][ ][ ] BUCCAL
[ ][ ][ ][ ][ ][ ] LINGUAL
[ ][ ][ ][ ][ ][ ] MESIAL
[ ][ ][ ][ ][ ][ ] DISTAL

[A]

[ ][ ][ ][ ] ID [ ][ ][ ] TOWN OF SCHOOL

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imo

6 7 8 9 10 11

[ ][ ][ ][ ][ ][ ]
[ ][ ][ ][ ][ ][ ]

27 26 25 24 23 22

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odontic Need

[ ] [ ] [ ] [ ]

0 = NO
1 = YES

---

atment Need (Extractions)

1 = DECIDUOUS 2 = PERMANENT
5 = CARIES 6 = PERIO 7 = DENTURES 9 = OTHER

2 3 4 5 6 7 8

[ ][ ][ ][ ][ ][ ][ ]
[ ][ ][ ][ ][ ][ ][ ]

31 30 29 28 27 26 25

9 10 11 12 13 14 15

[ ][ ][ ][ ][ ][ ][ ]
[ ][ ][ ][ ][ ][ ][ ]

24 23 22 21 20 19 18

[B]

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
Division of Preventive Medicine
Forsyth Dental Center

Your child's teeth have been examined by the dentist, and have been found to be in Class _____.

An explanation of our classification system is as follows:

CLASS I - Apparently not requiring any treatment according to this type of examination

CLASS II - Treatment required

CLASS III - Early Treatment required

CLASS IV - IMMEDIATE TREATMENT REQUIRED DUE TO PAIN AND/OR INFECTION

Children in CLASS I should continue regular visits to the family dentist, who may find newly developing cavities or small cavities that escaped our detection, especially since we did not take x-rays.

If your child is in CLASS II, inform your family dentist at your next regularly scheduled check-up. He may not feel that treatment is imperative, and you should rely on his judgment.

Children in CLASS III should be seen by a dentist as soon as possible.

Children in CLASS IV should be seen immediately.

Paul F. DePaola, D.D.S.
Program Director